PATIENTS IN SPECIAL SECURITY PSYCHIATRIC CARE IN SCOTLAND

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Declaration

I declare that this thesis has been composed by myself. It is based on work carried out in collaboration with others. The nature of that collaboration is described in the acknowledgements. The thesis has not been submitted in candidature for any other degree, diploma or professional qualification.

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Abstract

Background. The State Hospital, Carstairs, is the special security psychiatric facility for Scotland and Northern Ireland. The term special security refers to both high and medium secure psychiatric provision. The State Hospital cares for patients with mental illness or learning disability, and dangerous, violent or criminal propensities. This thesis describes the cohort of patients resident within the State Hospital (n=241) between 1992 and 1993. It examines the evidence associating mental disorder, crime and violence; explores the concept of risk; and reviews the facilities and systems in operation to manage such risk. It delineates female, schizophrenic, patient, offender and prisoner subgroups of the total population. It investigates factors likely to predict admission to high security psychiatric care for patients with schizophrenia, learning disability, and co-morbid schizophrenia and learning disability. Lastly, it studies trends in the use of this facility throughout this decade, examines external factors likely to influence this and considers possible future developments.

Results. Patients were on average 34 years of age and had spent 9 years in psychiatric hospitals. Seventy percent had a diagnosis of schizophrenia and almost a third had a primary or secondary diagnosis of antisocial personality disorder. Approximately half were admitted following an offence and over 80% had a history of criminal activity.

Physical health problems were present in more than 50% of patients. Many had experienced adverse events in childhood. Psychotic symptoms, seriously disturbed behaviour and instances of self-harm continued to occur in many patients despite extensive treatment. Over half were said not to require the full security of the State Hospital and lack of adequate local facilities was the commonest reason given for failure to transfer them elsewhere.

Predictive factors for admission to the State Hospital for patients with schizophrenia at the time of their first psychiatric admission included male gender, younger age at first hospital admission, greater chronic physical ill health, poorer educational

attainment and more substance misuse in first degree relatives. A greater criminological history, poorer educational attainment, longer hospital stays but fewer admissions, and more lifetime symptoms of psychosis were predictive factors at the time of admission. Predictors of admission to the State Hospital for people with learning disability were substance misuse, previous self-harm and single marital status. For the co-morbid learning disability and schizophrenic cohort these were earlier age of first hospital admission, no family history of either condition, a history of cerebral insult and male gender.
The State Hospital population increased from 200 patients in 1993 to 242 in 1998. A comparison of the trends seen in the mental health and criminal justice systems with trends in the State Hospital population indicates a relationship between the two, particularly changes in the number of drug related crimes and in the number of available psychiatric beds.

Conclusions. These patients represent a severely ill population whose disadvantages have been compounded by adversities that have arisen from their earliest years. Their history of long-standing psychiatric illness, disturbed behaviour, inadequate response to medication and social isolation suggests that substantial care will be required in the future. Women are different from their male counterparts and need intensive, rather than high security, psychiatric care. It is possible to create models predicting admission to the State Hospital at the time of first admission and at index admission with 75.1% and 97.9% accuracy respectively. Most of the model factors suggest that it is a deprived background and lack of social support that leads to admission to the State Hospital, but almost 70% were actively psychotic at the time of the index event and substance misuse has a major role. The rise in the State Hospital population, the increase in drug related crime and reduction in the number of psychiatric beds associated with this, and the inappropriate placement of some patients, emphasises the need for the development of a range of service throughout Scotland and Northern Ireland.

Introduction

In every country of the world there exists a group of people who suffer from mental disorder and who have offended, or behaved in a dangerous or violent manner. Some of these cases will have a high public profile and may engender strong emotions directed towards the perpetrator, his family and carers. Many countries for humanitarian reasons have developed legislation that recognises the effect of mental disorder on culpability, and that enables diversion of offenders to health services where appropriate. Some of these people cannot be cared for in local psychiatric facilities because of the seriousness of their offence, the aggressiveness of their behaviour or the potential future risk they pose to the public. These individuals require care in a secure psychiatric hospital. Although the numbers that require such care are small compared to the total population in hospital or prison, their significance in public or political terms is large. For the patients and their families it is important to understand their mental disorder, its relationship to their offending or dangerous behaviour, and the nature of the treatment that they will receive. For health service staff it is essential to be aware of the clinical needs of this patient group, and to have a strong evidence base for the assessment practices and pharmacological, psychological, occupational and social treatments employed. For the public it is vital that there is confidence in the risk assessment and management practices in operation with these patients. The common theme that links these requirements is research data.

The Role and History of the State Hospital

The State Hospital is the high security psychiatric hospital for Scotland and Northern Ireland. It cares for people with mental disorders who have "dangerous, violent or criminal propensities" (Mental Health (Scotland) Act 1984). All patients are legally detained under the Mental Health (Scotland) Act 1984 or the Criminal Procedure (Scotland) Act 1975 or 1995.

The history of the care of mentally disordered offenders in Scotland and of the State Hospital has been described in detail by Willox (1967), Baird (1984), and McComish and Paterson (1996). In 1839 a bill was introduced to Parliament "To improve prisons and prison discipline in Scotland". By this legislation Parliament accepted the recommendation of the Inspector of Prisons that "A lunatic asylum (to) be created for the reception of all lunatic prisoners in Scotland". In 1846 new regulations made possible the admission of insane and criminal lunatics to the General Prison at Perth. This Criminal Lunatic Department accepted prisoners found insane in bar of trial, found insane at the time of the offence, sentenced to punishment but certified insane, or committed on a criminal charge and certified insane. In 1857 an Act of Parliament established the Board of Commissioners in Lunacy and provision was made to build local asylums. The Board's annual reports were at times critical of the care and treatment of these patients and although there were many changes throughout the intervening years these patients continued to be cared for in Perth Prison. Finally agreement was reached in 1934 to build a State Institution for Defectives. This was to become known as the State Hospital.

The State Hospital is located in Lanarkshire approximately 30 miles equidistant from Glasgow and Edinburgh. It was chosen for its remote geographical location and natural secure boundaries. Building work began in August 1936 on a site to become known as the east wing. During World War II the hospital was used to care for servicemen with neuroses and psychoses. In 1948 it opened its doors to people with learning disability in need of secure care. In 1957, following the closure of a special unit at HM Prison Perth, the west wing opened to care for patients with major mental illnesses. The east and west wings were separated by a road and railway line and both were therefore largely independent secure compounds. As the years progressed the separation of the mental illness and learning disability populations was abandoned and numbers began to fall from a high point in the mid 1970s of approximately 360 patients, particularly of those with a learning disability.

In 1976 two patients, each with a diagnosis of personality disorder, escaped from the State Hospital (Scottish Home and Health Department, 1977). During this episode

three people lost their lives. It is this incident more than any other that has shaped the public perception of Carstairs. In terms of psychiatric practice, it precipitated or accelerated a change in Scottish psychiatric practice whereby individuals with personality disorders who offend are dealt with by the criminal justice system.

The hospital became a fully integrated part of the National Health Service in 1991. The State Hospital Board for Scotland was created, by virtue of the State Hospital (Scotland) Act 1994, and came into existence in April 1995. It functions as a special health board. During this decade the hospital has changed markedly both physically and attitudinally. Extensive new building work and renovation of all existing wards has taken place. It currently has 260 beds. The east wing was closed and demolished in September 1997. Although public safety remains a priority, custodial attitudes have been challenged and largely replaced by therapeutic relationships whereby assessment, diagnosis, treatment and rehabilitation are the primary goals.

At the present time there are twelve wards in the hospital: one male admission, one mixed sex, one for patients with a primary diagnosis of learning disability, two rehabilitation and seven generic male wards. Each patient in a high security setting requires ongoing assessment of their illness, treatment resistance and risk. The assessment of risk examines violent episodes, or threatened actions, and considers any precipitating factors including deterioration in mental state, life events, substance misuse, non-compliance and social instability (Royal College of Psychiatrists Special Working Party on Clinical Assessment and Management of Risk, 1996). A major aim of staff at the State Hospital is to prevent violent episodes and to de-escalate those in progress. High quality training is essential.

In 1992 major changes occurred in consultant staffing within the State Hospital. Four forensic psychiatrists left and one remained. During the period of the research two consultant forensic psychiatrists, one consultant with a special interest in forensic psychiatry, one in the field of learning disability and one with experience gained from the Mental Welfare Commission were appointed. During the day there were five nurses per shift for a ward of a maximum of twenty-six patients.

The patient's management is currently organised by a multidisciplinary team comprising psychiatric, nursing, social work, psychology and occupational therapy staff. Regular case conferences are held, and reviews of detention carried out or formal reports prepared for the Scottish Executive. Treatment plans are aimed at: 1) improving mental state; 2) improving social functioning, self care and self esteem; 3) reducing aggressive or challenging behaviour; 4) promoting use of coping techniques; 5) encouraging community links; and 6) ongoing analysis of risk following each intervention.

The State Hospital is an institution and patients spend prolonged periods there. There is therefore considerable risk that institutionalised behaviour will develop and this is known to have a deleterious effect on the prognosis of mental disorder. Patients require access to activities, structure to their day and the opportunity to express themselves as individuals. In order to provide this activity, the State Hospital has occupational departments such as woodwork, arts and crafts, gardens and laundry. Patients are given a choice as to which departments they would like to attend. In addition there is an education department. Patients vary greatly in their abilities and some will require help with basic literacy skills while others will pursue Open University courses. For most people life revolves around three basic activities: work, daily living tasks, and recreation. In the high security hospitals patients are assessed for their ability to carry out basic living tasks and recreational activities are available such as bowling or football.

Each ward organises individual therapeutic activities but throughout the hospital groups on anger management, anxiety management, relaxation, substance misuse, coping with mental illness, communication skills, social skills training, assertiveness training and practical skills take place. Alcoholics Anonymous hold meetings within the hospital. It is important to address with patients the issues surrounding their index offence where present.

The State Hospital has an expert panel to provide an independent opinion on a responsible medical officer's recommendation for transfer or continued hospital detention of a patient. For restricted patients transfer will require the consent of the first minister. It is essential that good communication is established between the transferring and receiving teams. Ideally a pre-transfer case conference will take place and a treatment plan agreed.

The State Hospital has a high public profile and issues regarding an individual patient have recently commanded front page coverage in broadsheet newspapers every day for over one week. It is perhaps its profile along with publicly perpetuated myths about the patient group that arouses the initial interest of medical students. For the past seven years medical students from the University of Edinburgh have visited the State Hospital as part of their psychiatry teaching. Following their visit one-third have declared that they wish to consider a career in forensic psychiatry (Thomson et al, 1999). There are those who argue that teaching in such surroundings may encourage voyeurism but it can be argued that it is a legitimate task to educate medical students about the place of such a specialist facility and to impart some understanding of the role of the forensic psychiatrist. Similarly, it is important that the media is used to promote understanding of the role and work of the State Hospital. Not all publicity has been detrimental (McLean, 1994).

High Security Psychiatric Hospitals within the United Kingdom

There are four high security hospitals in the United Kingdom: Broadmoor Hospital in Berkshire (founded in 1863), Rampton Hospital in Nottinghamshire (1914), Ashworth Hospital in Merseyside (1990) which opened following the amalgamation of Park Lane (1974) and Mosside Hospitals (1913), and the State Hospital at Carstairs (1948). The first three are known as the special hospitals and serve England and Wales. The State Hospital offers a special security service, combining high and medium secure care, because there are no medium secure facilities in Scotland or Northern Ireland. In reality, although the term special security is used, patients are living in a high security setting and cannot be given gradually increasing liberty out of the hospital setting in a way that is possible in medium secure units.

All four hospitals provide care for patients with mental disorders who offend, or are alleged to have offended, or who exhibit or threaten violent or dangerous behaviour. There are approximately 2,000 patients in these facilities and all are formally detained under mental health or criminal legislation. There is no strict definition of what is meant by high security but all of these hospitals have a secure perimeter fence with powerful lighting, cameras and motion detectors. Security procedures vary in each institution but most have airport style security measures such as x-ray screening and metal detectors. Personal alarms, air lock entries to wards, and security policies, for example on random searches, are common. The special hospitals are currently administered by the high security psychiatric services commissioning board although regional management is planned. Carstairs is administered by the State Hospital Board for Scotland.

The high security hospitals by their very nature are closed institutions and all patients are detained. Admission to such a hospital with its distinctive security features and staff trained to manage disturbed behaviour can have a settling effect. It is important to recognise that people in such circumstances are vulnerable to the attitudes and actions of staff. Abuses have occurred in these settings and it is essential that all staff remain vigilant to this possibility. The existence of advocacy departments, rigorous complaints procedures and greater openness of the institutions themselves in terms of throughput of staff and visitors decrease the likelihood that such abuses will occur.

The need for research into maximum security hospitals has long been recognised. In 1968 the Special Hospitals Research Unit was created and, more recently, in 1989 when the Special Hospitals Service Authority (SHSA) was founded, one of its six ministerial objectives was "the promotion of research in fields related to forensic psychiatry" (Hansard, 7/6/89). The report on the Review of Health and Social Services for Mentally Disordered Offenders and Others Requiring Similar services (D of H/Home Office, 1992) acknowledged however, that "the effective development and operation of services for mentally disordered offenders requires a sound academic and research base. This base is at present poorly developed and

requires corrective action from the centre." The High Security Psychiatric Services Commissioning Board, the successor to the SHSA, has research as part of its remit and organises a national (England and Wales) programme on forensic mental health research and development.

The North-South Divide

The State Hospital functions within a different legal framework from the English Special Hospitals and in contrast to the situation there, seldom admits those with a primary diagnosis of personality disorder. The legal category of psychopathic disorder is not included in the Mental Health (Scotland) Act 1984 although mental disorder includes a persistent disorder manifested only by abnormally aggressive and seriously irresponsible conduct which is very similar to the Mental Health Act 1983 definition of psychopathic disorder. A degree of secure provision exists in some local hospitals in Scotland, but otherwise all care at a greater level of security is provided within the State Hospital. There are no regional secure units. The report on the Review of Health and Social Services for Mentally Disordered Offenders and Others Requiring Similar Services (D of H/Home Office, 1992) recognised the principle that care for all psychiatric patients should be located as near to their home area as possible and in conditions of no greater security than is justified. While the report had no remit in Scotland, the need for a strategy for forensic psychiatry in Scotland was recognised. For this reason in 1992 it was considered important to describe and define the population of patients who receive care in conditions of special security within Scotland. This thesis describes the cohort of patients in secure psychiatric care within the State Hospital in demographic, clinical, social and psychological terms and highlights the severity of their psychiatric illnesses.

Government Policy

In 1999 the Scottish Office policy on "Health, Social Work and Related Services for Mentally Disordered Offenders in Scotland" was published. The term mentally disordered offender incorporates those who are "considered to suffer from a mental disorder as defined in the Mental Health (Scotland) Act 1984, whether or not they are, or may be, managed under its provisions and come to the attention of the

criminal justice system." In the 1984 Act a "mental disorder means mental illness or mental handicap however caused or manifested". The issue of personality disorder was advanced separately by the creation of a Committee chaired by Lord Maclean to examine the sentencing and treatment of serious sexual and violent offenders, including those with personality disorders. The policy document sets out guiding principles for the care of mentally disordered offenders. They "should be cared for:

- with regard to quality of care and proper attention to the needs of individuals;
- as far as possible in the community rather that in institutional settings;
- under conditions of no greater security that is justified by the degree of danger they present to themselves or to others;
- in such a way as to maximise rehabilitation and their chance of sustaining an independent life;
- as near as possible to their own homes or families if they have them."

In the document it was acknowledged that successive Governments had chosen not to build medium secure facilities in Scotland but to base all secure provision above that provided by local psychiatric hospitals, at the State Hospital. This had lead to problems in rehabilitation, inappropriate referrals and prolonged delays in transfer back to local units.

Thesis

In spite of the obvious clinical, public and political interest in those patients requiring high security psychiatric care, little had been published about this population. This thesis examines the population of the State Hospital: the patients' demographic characteristics, diagnoses, criminological histories, family and social backgrounds, medical and psychiatric histories, legal status, reasons for admission, mental state, intelligence, needs and security requirements. It studies subgroups of the total population: women, patients with schizophrenia, and those with a label of "patient, offender or prisoner" derived from their legal detention status. It analyses those factors that make admission to high security psychiatric care more likely in patients with schizophrenia, learning disability, and co-morbid schizophrenia and learning disability, by comparing cohorts of these patients resident in high security

psychiatric care and in the community. In a year when a new Government policy for mentally disordered offenders has been launched, it examines the use of the high security psychiatric facility in Scotland during this decade and considers what external factors, such as drug misuse, may influence this. Finally, conclusions are presented about the nature and needs of this population, risk assessment and the future structure of forensic psychiatry facilities in Scotland and Northern Ireland.

Literature Review

Crime, Violence and Mental Disorder

The vast majority of patients with mental disorders pose no risk to the safety of others. As a proportion of the number of offences in our society, the absolute risk of crime or violence presented by this population is small. However, some patients do commit violent offences, and the estimation of the magnitude of the problem, along with the identification of those patients most likely to offend is clearly important. In this chapter a selection of the more recent literature examining the relationships between crime, violence and mental disorder is presented, highlighting some of the important issues and areas of research in this field.

Patient Based Studies

In the USA the MacArthur Violence Risk Assessment Study compared violence by people discharged from acute psychiatric in-patient facilities with that of others living in the same neighbourhoods (Steadman et al, 1998). Accounts of violence were recorded every ten weeks for a year using patient self-report and data from informants, police and hospital records. The controls were interviewed once regarding violence in the previous ten weeks. No difference was found in the prevalence of violence between the patients and controls. Substance misuse was associated with increased rates of violence in both groups, and this difference was more pronounced in patients than in controls (major mental disorder without substance misuse - 18%, with substance misuse - 31%). The highest incidence of violence (42%) was found in those with a combination of substance misuse and conditions such as personality disorder or adjustment disorder. The findings of this study present a challenge to the widely held view that there is a link between major mental disorder and violence.

In contrast, Eronen et al (1996-a) found that in Finland rates of homicidal violence were increased in schizophrenia (8 fold in men, 6.5 fold in women), antisocial personality disorder (10- fold and 50- fold) and alcohol abuse (11- fold and 38-

fold). However, their study was based on psychiatric assessments made after the event as part of the judicial process, and numbers known to have mental illness at the time of the homicide are not reported. Furthermore, estimates of disease prevalence were derived from an American epidemiological study, and while overall rates of schizophrenia are similar their study did not control for the impact of more local factors.

In the same cohort 41 of the 93 offenders with schizophrenia had an alcohol problem (Eronen et al, 1996-b). They also found high levels of morbidity in 36 male homicide recidivists: alcohol problem (24), personality disorder (23), co-morbid alcohol problem and personality disorder (21), schizophrenia (4), major depression (2) (Eronen et al, (1996-c).

A study of patients with mental illness in community sheltered care found that their arrest rate was lower than the general population for all crimes but 1.33 times higher for violent crimes (Hwang and Segal, 1996). Male gender, younger age, substance misuse and history of criminal convictions were significant predictors of criminality.

Population Based Studies

Swanson et al (1990) examined violence in psychiatric disorders in the community using evidence from the Epidemiological Catchment Area survey. Three hundred and sixty eight responders reported that they had been violent during the past twelve months and 55.5% of these had a psychiatric disorder, mostly substance misuse. The prevalence of affective disorders (9.37% v 2.95%) and schizophrenia (3.92% v 1.03%) were three times greater in violent responders than non-violent responders. The model for predictors of violence from this study included sex, age, socio-economic status, substance abuse and major mental illness. Their data is supported by a large Danish birth cohort (Hodgins et al, 1996), which found increased rates of criminal convictions associated with having had a period of psychiatric in-patient treatment.

Biochemical, Physiological, Genetic and Anatomical Studies

Several hypotheses relating violence to biological mechanisms have been put forward. There is as yet no clear consensus of opinion arising from this work. Moffitt (1998) found that raised serum serotonin in a study of 21 year old males and females (n=781), was associated in men with higher rates of self-reported violence but not with criminal convictions. Kunz (1995) assayed cerebrospinal fluid levels of 5-hydroxyindolacetic acid (5-HIAA) in 10 violent and 10 non-violent patients with schizophrenia and found no significant differences between the two groups. Subjects and controls were matched for medication type and dosage and this may have influenced the findings. Alternatively, it was suggested that serotonergic mechanisms may not be relevant to aggression in schizophrenia.

Lachman et al (1998) examined 55 patients with schizophrenia or schizoaffective disorder with or without a history of aggression. Sixty-four percent of patients homozygous for the low-activity catechol o-methyltransferase (COMT) allele were violent whereas 80% of the high activity allele homozygous patients were non-violent. COMT inactivates catecholamines and it was concluded that the gene determining the activity of an important regulatory enzyme in catecholamine inactivation is associated with violent behaviour in patients with schizophrenia and schizoaffective disorder. This confirmed the findings of an earlier study (Strous et al, 1997).

Stålenheim et al (1998) proposed the use of serum triiodothyronine (T3) and free thyroxine (FT4) as biological markers for alcohol abuse and antisocial behaviour, following a study of 61 men referred by the courts for a psychiatric assessment and 66 medical student controls. The subjects had low FT4 and high T3 which were related to measures of alcohol misuse and antisocial behaviour.

Brennan et al (1997) hypothesised that people with a paternal family history of crime who did not offend were protected by an increased autonomic nervous system responsiveness. Evidence for this theory was found in the higher skin conductance and heart rate of non-criminal subjects with criminal fathers.

Kaplan et al (1996) in Israel found that reduced daily hours of sunlight lead to increased rates of restraint in patients with an affective disorder or schizophrenia one month later and they suggested that the season should be taken into consideration when predicting risk.

Wong et al (1997) in a study of 31 offenders (17 violent recidivists and 14 non-repetitive violent) with schizophrenia or schizoaffective disorder in a high security hospital and 6 controls, found perfusion changes in the anterior inferior temporal regions. They suggested that metabolic changes in these regions may be linked to patterns of violent behaviour in patients with schizophrenia.

While such findings provide interesting avenues for further research, there is little as yet to explain why some patients offend and others do not.

Schizophrenia, Crime and Violence

In the mind of the general public people with schizophrenia are dangerous. Such a perception is fuelled by cases such as that of Christopher Clunis who killed Jonathan Zito in 1992. Many patients in a high security psychiatric setting will have schizophrenia (Taylor et al, 1991; Maden et al, 1993) and it is relevant to review the evidence for associations between schizophrenia, crime and violence.

Birth cohort studies have also found an association between schizophrenia and criminal acts (Hodgins et al, 1996). A 1966 Finnish birth cohort study (n=12,058) which controlled for childhood socio-economic status found schizophrenia was associated with increased rates of crime (3- fold) and violent crime (7- fold) (Tiihonen et al, 1997). The risk of offending amongst patients with schizophrenia and alcohol abuse was four times higher than that in non-abusing patients with schizophrenia, although this was still higher than those without a mental disorder.

Other researchers have chosen to examine schizophrenia specifically in association with criminal or dangerous behaviour. Humphreys et al (1992) examined dangerous behaviour preceding first admission for schizophrenia and specifically excluded patients with a history of drug or alcohol abuse. One fifth of cases were found to have behaved in a life threatening manner towards others prior to their initial admission. Wessely et al (1994) looked at the criminological histories of incident cases of schizophrenia and found that violence in male patients with schizophrenia was 3.8 times greater than in other mentally disordered groups. In women this three fold increase applied to all forms of crime. They found that the strongest predictors of crime were gender, ethnicity, unemployment, age at onset, substance abuse and a history of previous offending. A Swiss study (Modestin and Ammann, 1996) found significant differences in rates of criminality between patients with schizophrenia (36%) and the general male population (15%) but not with a control group (34%) matched for age, sex, marital status, occupational level and community size. Patients with schizophrenia were more likely to commit violent offences (x 5), crimes against property (x2.5), sexual offences and violations of drug laws (x 3), and less likely to violate traffic laws. They had shorter illnesses, higher rates of substance and alcohol abuse, poorer social circumstances and had spent less time in hospital than non-offender patients with schizophrenia.

Population studies, patient studies and studies of specific crimes or diagnosis all therefore show an association between schizophrenia and crime in particular violence, except for the MacArthur Violence Risk Assessment Study which found no difference in levels of violence between the schizophrenic cohort and the neighbourhood controls. Link and Stueve (1998) have suggested that this finding is not inconsistent with previous studies because of the importance of timing. They argue that it is in the acute stage of a psychotic episode that violence is more likely and that by the nature of this research these patients were excluded. Others have argued that the in-patient facilities from which subjects were recruited are not typical of the institutions in which many patients with schizophrenia find themselves.

Childhood experiences were examined in a group of 102 high security patients with schizophrenia (Heads et al, 1997). Four groups were found on cluster analysis: pure schizophrenia with an unremarkable background (41.4%); primary delinquents (19.6%); secondary delinquents (25.5%); and a neurotic group (13.7%). She proposed an interaction between adverse childhood events, psychotic symptoms and aggression. Childhood deprivation, (Marzuk, 1996); neurological deficit (Lapierre et al, 1995); developmental abnormality (Johnstone et al, 1991); personality disorder (Eronen et al, 1996-a); age, male gender and lower socio-economic origin (Glancy and Regehr, 1992); drug and alcohol abuse (Smith and Hucker, 1994); and severe stress, loss of social support and non-compliance with medication (Coid, 1996) have all been proposed as precipitators of aggression.

Symptoms

Given that there is an association between schizophrenia and violent offending in particular, researchers have looked to see if specific symptoms were more likely to lead to aggression. Increased aggression has been linked to a greater number and specific types of psychiatric symptoms such as suspiciousness, non co-operation, active social avoidance, hostility and poor impulse control; symptoms suggestive of frontal lobe impairment; and excitement (Cheung et al, 1997). Wessely et al (1993) in a study of 83 patients admitted to an acute psychiatric hospital with psychotic illness, mainly schizophrenia, found that 60% of participants reported at least one action based on a delusional belief and 20% had three or more. Delusions of a persecutory nature were most likely to be associated with aggression. Acting on delusions was associated with identification of evidence for it especially in the past week; anxiety, sadness or fear arising from it; uncertainty if a belief was challenged; and actively seeking information to support or refute the delusional belief. Taylor and Monahan (1996) found that 27% of an in-patient sample had acted on delusional beliefs during a 28 day period. A range of delusional beliefs may be acted upon. Buchanan (1993) found that passivity, bodily harm, sexual, Capgras and De Clerambault's delusions as well as command hallucinations may result in violence, whereas Taylor and Monahan (1996) suggest that passivity, religious, paranormal influence and physical influence delusions are the most important. In one study

comparing psychotic patients with command hallucinations to those with other hallucinations no difference was found in levels of aggression (Kasper et al, 1996). Command hallucinations were reportedly more likely to be acted upon if the individual recognised the voice and if the content was related to delusional beliefs (Hersh and Borum, 1998). Reported rates of compliance with auditory hallucinations range from 39.2% to 88.5%.

Threat control-override (TCO), which includes persecutory delusions and passivity phenomena, has been advanced as an aetiological factor for aggression. It is proposed that the aggression is a rational response to perceived threats (Link and Stueve, 1994). Swanson et al (1996) found that participants with perceived threat and internal control-override were more than twice as likely to have been violent in the past year than patients with other psychotic symptoms. The probability of violent behaviour in the presence of a major mental disorder, substance misuse and TCO was 0.86.

A meta-analysis of violent recidivism comparing mentally disordered offenders and non-disordered offenders found, however, no differences in the predictors of recidivism (Bonta et al, 1998). Antisocial personality, substance misuse, childhood deprivation and offending history were found to be the major predictors, and clinical features were unrelated to recidivism. This is contrary to the finding in the high security hospitals that 75% of disturbed or offending behaviour leading to admission was psychotically motivated (Taylor et al, 1998).

Substance Misuse and Criminality

Clinical practice suggests that substance misuse has a deleterious effect on major mental disorders and makes aggressive behaviour more likely. Possession of drugs such as cannabis, ecstasy or non-prescribed opiates or benzodiazepines is illegal, and crime is therefore an inherent part of drug misuse. Substance misuse incorporates both alcohol and drugs, and is an essential factor to consider in risk assessment. The literature in this field is relevant to those who find themselves in a

high security psychiatric hospital but variations in definitions of substance misuse, population of study and country of origin require caution in translating individual results into general statements.

Epidemiology

Substance misuse has been studied in different populations.

Substance Misuse in Offender Populations

The prevalence of alcohol abuse was found to be 58% in male remand prisoners (women 36%) and 63% in male sentenced prisoners (women 39%) in England and Wales (Singleton et al, 1998). Less than one fifth of men and one third of women claimed never to have used drugs while 50% of sentenced men (women 33%) reported that they were using drugs in prison. Of remand prisoners (n=277) in Brixton prison 52% were judged to have treatment of substance abuse as an unmet need (Hardie et al, 1998). In a study of 116 police surgeons 39% of cases seen were reported to be alcohol related (Deehan et al, 1998).

Substance Misuse in Psychiatric Care

A study of 1,289 violent incidents by 174 patients in an acute psychiatric unit found a lower incidence of violence in patients with a primary diagnosis of substance abuse (Owen et al, 1998). In a study of all residents in high security psychiatric care (n=1740) only 20% had a diagnosis of substance misuse (Taylor et al, 1998). This low frequency was attributed to a combination of underreporting, historical lower levels of substance misuse in society for patients admitted some time ago, and problems of distinguishing between a clinical diagnosis and intermittent use leading to offending behaviour. Similarly, 15% of schizophrenic patients (n=1,111) admitted to the three special hospitals between 1972 and 1995 reported a history of substance misuse (Corbett et al, 1998).

Crime and Violence in Substance Abusing Populations

Fifty-eight percent of men (n=59) being treated for substance abuse reported at least one incident of physical family violence in the past year and 100% admitted to

psychological abuse (Brown et al, 1998). In treatment progammes for people with sexually transmitted diseases, acquired immune deficiency syndrome and tuberculosis, staff assault was 3.1 times more frequent in alcohol abusing patients and 1.8 times more common amongst intoxicated drug users (Schulte et al, 1998). In a further study 95% of 250 drug addicts had committed a crime (Nurco, 1998).

Associations between alcohol availability and offending behaviour have been identified (Nortstrom, 1998; Gorman et al, 1998; Stevenson et al, 1999).

Co-morbidity and Crime

The evidence for an association between dual diagnosis (major psychotic illness and drug or alcohol misuse) and violence is strong. Swanson et al (1990) found that if research subjects had neither schizophrenia nor abused substances then violence was reported in the last twelve months in 2% of cases. If they had schizophrenia but did not abuse substances this rose to 8.3%. If they had substance misuse alone then 21% reported being violent in the previous twelve months and if they had schizophrenia and abused substances this increased to 30%.

The prevalence of dual diagnosis among general psychiatric patients has been estimated at between 22 and 36% (Johnson, 1997). Dual diagnosis has been found to be significantly associated with violence (Scott et al, 1998; Swartz et al, 1998), arrest (Muntaner et al, 1998), and relapse (Gupta, 1996, Miner et al, 1997).

Patients with both psychosis and substance abuse were significantly more likely to report recent aggression (40.7% v 9.5%) or a criminological history (74.1% v 34.4%) than those with psychosis alone (Scott et al, 1998). In the MacArthur Violence Risk Assessment study (Steadman et al, 1998) substance misuse was associated with increased rates of violence over a one year period in both subjects and controls. This difference was more pronounced in patients (major mental disorder without substance misuse 18%; with substance misuse 31%) than in controls. These studies provide evidence of a synergistic effect between substance abuse and mental disorder in the causation of violence.

In spite of the evidence that substance misuse in the presence of major mental illness leads to increased risk of violence, it is often not given adequate attention by health professionals. A study of 42 in-patients with research diagnoses of both schizophrenia and current substance use disorder found that 45% did not receive a substance related diagnosis at discharge. Alcohol was the commonest (86%) substance of abuse (Kirchner et al, 1998).

In a study of 350 opiate addicts in Hamburg, 55% were found to have an additional ICD-10 diagnosis chiefly neurotic, somatoform or affective disorders (Krausz, 1998). The prevalence of personality disorders in a drug dependent population (n=226) in Greece was found to be 59.5% with over 60% of these having more than one PD, most commonly antisocial personality disorder (ASPD) (33.5%) (Kokkevi et al, 1998).

Aetiology of Substance Misuse and Crime

There is no simple relationship between substance misuse and crime but situational and individual factors can act with pharmacological effects to produce aggression or offending behaviours.

Pharmacological effects

A direct pharmacological effect of alcohol on aggression has been postulated. The actions of the inhibitory neurotransmitter gamma-amino butyric acid (GABA) are potentiated by alcohol or benzodiazapines, and this may decrease fear and anxiety thereby increasing the chance of an aggressive response (Graham et al, 1998).

The dopaminergic system promotes exploration and its stimulation can occur with alcohol or psychomotor stimulants and may result in anti-social behaviour in the presence of reduced social awareness (Graham et al, 1998). Stressors and adverse life events can stimulate the mesolimbic dopaminergic system and may result in sensitisation towards drugs of abuse (Ciccocioppo, 1999).

Alcohol affects the cerebral cortex, for example changes in prefrontal functioning may result in disinhibition, or changes in cognitive processing may lead to reduced self awareness and ability to form coping strategies (Graham et al, 1998).
The serotonergic (5-HT) system has a role in impulse control. Altered 5-HT function influences drug self-administration in drug withdrawal states and may contribute to loss of control over drug taking (Ciccocioppo, 1999). Raised whole blood serotonin and reduced CSF serotonin metabolites have been related to violence (Moffitt et al, 1998). Alterations in 5-HT function may therefore be common to both substance abuse and aggression.

Genetics (Crabbe and Phillips, 1998)
Research has suggested a gene influencing alcohol consumption in mice at or near the 5-HT_{1B} receptor gene on chromosome 9. Mice without the 5-HT_{1B} receptor gene manifest aggressive behaviour and drink twice as much alcohol as controls. This suggests that the 5-HT_{1B} receptor modulates alcohol drinking.

Familial transmission (McCord, 1999)
In a study of 214 natural father-son pairs it was found that paternal alcohol abuse predicted son's alcoholism, and that limited maternal competence and paternal aggression in the family predicted criminality.

Economic Factors (Goldstein, 1998)
Fifty-five percent of male and 59% of female drug abusers in New York admitted at least one episode of violence during an 8 week study period. Most were related to intoxication or withdrawal induced irritability (psychopharmacological violence), chiefly involving alcohol. Two further models linking drugs and violence were proposed: an economic compulsive model in which drug abusers engage in acquisitional offending to fund their drug abuse, sometimes resulting in violence such as armed robbery; and a systemic model, often associated with heroin or cocaine use, in which violence arises as part of trading in illegal substances. Another study found that about half of New York homicides were drug related; a high

number were related to drug trafficking (74%) and alcohol was the chief substance involved in psychopharmacological homicides (81%).

Delinquency

Of 400 patients on methadone maintenance, 77% had committed a crime before their first use of heroin, 20% used heroin before their first offence and 3% had no history of offending. Those who offended before abusing heroin were younger, more likely to be male, to attract a diagnosis of ASPD and to have a history of conduct disorder. A significantly higher proportion of them had committed robberies, armed robberies, or robberies involving violence. Nearly twice as many had assaulted someone with a weapon or had cruelly hurt or tortured a person. Prior to their first use of heroin they had been convicted of offences such as shop lifting or car theft. This is probably an age effect and more serious offending would have developed even without the presence of drug abuse (Kaye et al, 1998).

In a study of patients with schizophrenia or major affective disorders (n=293), those with an additional diagnosis of ASPD and/or a history of conduct disorder were more likely to have a substance use disorder (Mueser, Rosenberg et al, 1999; Mueser, Drake et al, 1998). The odds ratios for ASPD and substance abuse varied from 3.96 (lifetime cannabis use disorders), or 5.29 (lifetime alcohol disorder) to 11.35 (recent cocaine use disorder). A paternal history of alcohol (82.4%) or drug (26.7%) abuse was related to patients with childhood conduct disorder and adult ASPD.

A laboratory study examined the effects of alcohol on aggression in eight subjects with ASPD and ten controls (Moeller et al, 1998). Aggressive response to alcohol was greater in subjects with ASPD and the authors postulate a common underlying mechanism involving serotonin.

Criminological and Health Outcomes in Substance Misuse

Two studies examined the impact of methadone treatment on arrest rate. In 101 opiate addicts in Sweden in whom previous voluntary treatment had been

unsuccessful, compulsory treatment resulted in a lower incidence of arrest particularly in those continuing with methadone maintenance (Fugelstad et al, 1998). In 126 opiate dependent men in the USA methadone treatment had a slight effect on reducing arrest rate, but use of cocaine and prior criminal history was associated with an increased arrest rate (Rothbard et al, 1999).

A five year follow-up study of previously alcohol dependent patients (n=850) found that 38% remained heavy drinkers with poorer social functioning, psychological and physical morbidity than abstinent (43.6%) or controlled (6.5%) drinkers (Gual et al, 1999).

In a survey of 112 drug abusing offenders in South London, only 5% became abstinent while 63% re-offended. Serious offences such as burglary and violence decreased and acquisitional offences to fund drug abuse were associated with 55% of last recorded convictions. Attendance at drug and alcohol counselling advice services and with the probation service was associated with reduced re-offending. It was found that while primary opiate users were more likely to commit acquisitional offences, multiple users, including crack and cocaine abusers, were more likely to be violent (Haynes, 1998).

A study of 104 patients with a diagnosis of substance abuse and personality disorder followed for one year to monitor treatment outcome and relapse found that the likelihood of relapse increased with the number of personality disorder diagnoses made (Thomas et al, 1999). Similarly, a study of 105 out-patients and 82 in-patients with alcoholism found that a diagnosis of one or more personality disorders made relapse 3.4 times more likely in a three month follow up period than in patients without co-morbidity (Verheul et al, 1998).

Other Diagnoses and Problematic Behaviours

Personality Disorder

The importance of antisocial personality disorder has been emphasised in some of the above studies. The prevalence of personality disorders in the Special Hospitals has been estimated to be about 40% (Taylor et al, 1998) including both primary and secondary diagnoses, or 28% of all diagnoses (Maden et al, 1993). Reiss et al (1996) found that 20% of young male psychopaths treated in a high security hospital had re-offended on average two years post discharge into the community, and that a supportive social network was important in preventing recidivism. Steels et al (1998) compared the outcomes of restricted patients transferred/discharged from Special Hospitals under a legal classification of mental illness or psychopathy. Men with personality disorder had a better social prognosis and were three times more likely to find employment and four times more likely to establish a relationship but were twice as likely to be convicted and four times more likely to be imprisoned.

Attention Deficit Hyperactivity Disorder (ADHD)

There has recently been increased interest in ADHD in adults (Toone and Van der Linden, 1997; Carlson, 1996). The main features are hyperactivity, poor attention and poor impulse control from early childhood. It is almost three times more common in boys and the prevalence for those requiring treatment has been estimated between 2% in adolescence to 8% in school children (Sandberg, 1996). It was thought that children grew out of ADHD but studies have shown that up to two-thirds of ADHD children still have at least one prominent symptom in early adult life, a third fulfil criteria for a personality disorder and a sixth abuse substances (Gittelman et al, 1985). Taylor et al (1996) found evidence to suggest that hyperactivity could lead to conduct disorders, mental disorders, violence and other antisocial problems even without the presence of a conduct disorder. The presence of symptoms in adults is now recognised and indeed in some cases treated with stimulant medication. Hyperactivity reduces but lack of attention, poor impulse control and disorganisation may continue and present co-morbidly with substance

misuse, mood disorders, antisocial or intermittent explosive behaviour. It is probable that some of these individuals will require high security psychiatric care.

Asperger's Syndrome

Asperger's Syndrome (AS) is often misdiagnosed as schizophrenia, delusional or personality disorder, and therefore may be poorly managed by adult psychiatrists (Gillberg, 1998). Patients have difficulties with social interactions, communication and imagination, and display rigid and repetitive patterns of behaviour. Poor motor co-ordination is common. Intelligence levels vary but specific learning difficulties in reading or arithmetic are not unusual. The rate of AS was found to be between 3.6-7.1 in 1,000 children aged 7-16 years (Ehlers and Gillberg, 1993). The point prevalence of the disorder in a special hospital male population was found to be 1.5-2.5% (Scragg and Shah, 1994). The diagnosis involves a painstaking history from a third party informant. The majority of people with AS do not offend but some may commit a violent offence because of a powerful interest in guns, fire or killing; because of feelings of resentment caused by bullying or rejection at school or in the community; or because of oversensitivity to sound (Wing, 1997). Theft may occur in order to pursue a particular interest. Wing recommends that anyone showing a lack of concern or awareness about a charge and its possible consequences should be considered for a diagnosis of AS. There is no specific medical treatment for AS and psychotherapeutic approaches have little success because of the cognitive limitations of the syndrome. Optimum care consists of a structured environment and programme with appropriately trained staff. This may at times be provided in high security hospitals.

Problematic Behaviours

Many individuals with varying problematic behaviours are assessed by forensic psychiatrists and some admitted to high security psychiatric care. For example, the treatment of sexual offending requires in depth assessment and acknowledgement of offence(s), and makes use of cognitive behavioural therapy principles. It can involve sex education; use of control techniques such as recognition of high risk times, people and places; understanding the cycle of abuse which provides a structure for

recognising the progression of feelings, thoughts and behaviour leading to a sexual assault; cognitive restructuring which challenges and changes perceptions such as "the child wanted sex"; covert sensitisation which aims to reduce deviant fantasies by pairing these with an aversive consequence and eventually replacing them with appropriate sexual imagery; victim empathy; and relapse prevention (Beckett et al, 1994). Much work with sex offenders is taking place in the criminal justice system as well as in health settings.

Many patients have problems with anger. Anger management programmes incorporate education about aggression; self monitoring of anger frequency, intensity and situational triggers; construction of a personal anger provocation hierarchy used for practising coping skills; relaxation to reduce arousal and guided imagery training; cognitive restructuring by altering attentional focus, modifying appraisals and using self-instruction; training in behavioural coping, communication and assertiveness through role play; and practising new anger coping skills (Novaco et al, in press).

Fire setting causes concern particularly in residential settings. Puri et al (1995) studied 36 arsonists referred during a 4 year period to a forensic psychiatry service in England. Over a quarter were women and 44% of them had been sexually abused. A history of alcohol misuse was present in about 40% of both men and women, and a history of drug misuse was present in around a third. Three-fifths had a psychiatric history and 37% suffered from schizophrenia, 11% from depression, 3% from antisocial personality disorder, and 3% from learning disability. Thirty-four percent had no formal diagnosis made. The reasons given for fire-setting included burglary (11%), pleasure (17%), revenge on an unfaithful partner (6%), rejection (3%), substance abuse (17%), psychosis (29%), depression (14%), and "accidental" (3%). The authors proposed a classification based on predisposing and precipitating factors using a psychiatric, psychological and psychosocial framework. Repo et al (1997) studied 282 fire-setters referred for a pre-trial psychiatric assessment and compared first time offenders (21%), and recidivists with (40%) or without (39%) a history of other violent crimes. It was recognised that a psychiatric assessment is

carried out on only 10% of all arsonists. The recidivists had a greater incidence of antisocial personality disorder, began offending at a younger age, and were more often intoxicated at the time of the fire-setting than the first time arsonists. There was more psychosis in the first-time recidivists (27.1%) than the non-violent (13.6%) or violent recidivists (10.6%). A review of pathological fire-setting from 1951-1991 stated that "remarkably little work has been done on the treatment of adult fire-setters" (Barnett and Spitzer, 1994). Rice and Chaplin (1979) have put forward a model for social skills training for male fire-setters in hospital.

Stalking is a new term but not a new behaviour in psychiatry. It has been defined as "wilful, malicious, and repeated following or harassing of another person" usually with a "credible threat of violence" (Pilon, 1993). In the USA it has been estimated that up to 20% of women will be stalked during their lifetimes (Abrams et al, 1998). Kienlen et al (1997) compared case notes of 25 alleged stalkers who were referred for a forensic opinion. One-third had a psychosis but only one had symptoms of erotomania. The non-psychotic stalkers all had either a personality disorder, substance misuse, an adjustment disorder or depression. Schwartz-Watts and Morgan (1998) found violence to be more usual when the stalker had had a relationship with their victim. Stalking has been the subject of new legislation in the UK (Protection from Harassment Act, 1997).

Risk

The most obvious recent change in clinical management in forensic psychiatry practice has been in terminology. A glance at the literature will reveal that the concept of risk has superseded that of dangerousness. Why has this come about? The reality is that dangerousness is not a constant feature (Chiswick, 1995) but results from a combination of factors arising from the individual, the victim and the situation. The concept of risk, that is the likelihood of an adverse outcome, has been developed to assist clinicians in a systematic approach to problems and possible adverse outcomes. This has been reflected in a large number of publications since

1996 on risk (e.g. Duggan, 1997; Prins, 1996; Royal College of Psychiatrists Special Working Party, 1996; Moore, 1996).

Definitions

Clinically significant risks include those of relapse, non-compliance, substance misuse, suicide or aggression. Snowden (1997) highlighted the need to define and estimate risk so that decisions do not become clinical gambles based on inadequate information. Monahan (1993) adopted the approach of risk containment to reduce the incidence of violence and to minimise professional liability. Risk containment incorporates risk assessment , risk management, documentation, policy, and damage control.

Risk Assessment

A broad consensus exists on the fundamentals of risk assessment (e.g. Maden, 1998; Heads, 1997; Lodge, 1997): there is no alternative but a painstaking and thorough collection and review of information relevant to the patient. The Royal College of Psychiatrists (1996) has produced a concise document outlining this process with respect to the risk of harm to others. It acknowledges that risk cannot be completely eliminated; that it is a dynamic, not constant, factor and therefore requires regular reassessment; and that risks vary with each patient and may be specific to an individual such as a spouse. It stresses the need for third party sources of information and, in turn, the need to share the results of an assessment with others where necessary. It provides a model for a standardised assessment of risk incorporating information on a patient's history of previous acts of aggression or self-harm, cultural background of violence, social instability, substance misuse, and poor compliance with treatment and follow-up. It includes identification of precipitants or changes in mental state or pattern of behaviour before previous episodes of illness or violence. It highlights factors indicative of particular concern on mental state examination such as the display of strong emotions like hostility, anger, suspiciousness and irritability; the uttering of specific threats; and evidence of threat/control override symptoms. A formulation is required looking at each risk factor for severity, specificity, temporal relationships, volatility and methods of

reduction. Ongoing training is important (Harris, 1997) and Monahan (1993) suggests that forensic settings should have a "risk educator" who is responsible for keeping up to date with the field, collating relevant materials and disseminating this knowledge to colleagues. Ferris et al (1997) acknowledge that different assessment strategies may be used, although all must be systematic and comprehensive, and that risk assessments have validity for use in short-term prediction.

Oates (1997) comments on the importance of considering children in any risk assessment, particularly the offspring of patients. Parental psychosis can disrupt childhood by frequent separations, poor socio-economic circumstances and marital disharmony. Children, unlike adults, may not recognise cues of mounting aggression and diffuse or escape from a situation. Their very dependence on the mentally ill adult may be a trigger to aggression.

Harris and Rice (1997) stated that the factors most highly and consistently related to risk include age, sex, past antisocial and violent conduct, psychopathy, aggressive childhood behaviour, and substance misuse. Their view is that psychiatric disorder is a poor predictor of violence and that actuarial methods are more accurate than clinical judgement. One study comparing actuarial and clinical predictions of violence found a similar rate of true positives but actuarial prediction had lower rates of false-positive and false-negative errors (Gardner et al, 1996).

A clinical application of an actuarial approach to risk assessment is exemplified by the "Violence Prediction Scheme" (Webster et al, 1994). This combines an actuarial score based on historical factors (Risk Assessment Guide) with a clinical decision score (ASSESS-LIST). The former takes precedence and it is recommended that clinical factors should not modify the actuarial score by more than 10%. It is based on norms from a male, secure hospital in Canada. Its authors argue that this method encourages detailed analysis of patient factors and functioning and intend it "to be useful to colleagues in law on both sides of the courtroom". Using the Risk Assessment Guide 55% (115) of patients with a high score were violent recidivists. Alternatively, it can be stated that 45% (94 false positives) of those predicted to be a

high risk did not re-offend. In the low risk group 18.6% (76 false negatives) were violent re-offenders. Overall 72.5% (448) were assigned to the correct group.

Price (1997) and Grubin (1997) argue against the use of prediction models on the grounds that: 1) Risk assessment reports may be based on historically inaccurate facts. 2) Some subjective judgements, such as use of the Psychopathy Checklist – revised (Hare, 1991), may be required. 3) Actuarial predictions include a false positive rate, in other words those who have been labeled as probable re-offenders who do not offend. 4) Not all predictors would be equally valid in different populations. 5) This method under uses clinical data and judgement. 6) It is based on static historical factors and fails to include dynamic factors such as changes with age, treatment, environment and circumstance. 7) It does not use individual patient characteristics that may be directly relevant to an offence. 8) Actuarial predictions are statements of probability and as such are unlikely to predict unusual events.

The problem with the actuarial approach is that based on historical factors the prediction can never change. Webster et al (1995, 1997) combine risk and clinical assessment variables in the HCR-20 and thereby answer some of the above criticisms. It incorporates ten historical (H), five current clinical (C) and 5 future risk (R) variables, and has yet to be fully evaluated. Belfrage (1998) found good inter-rater reliability.

Management of Risk

The aims of managing identified risk are clear (Monahan, 1993; Royal College of Psychiatrists, 1996; Snowden, 1997): the clinician should act to reduce and manage the risk effectively and to ensure that a management plan is set in place that increases safety and reduces risk. In hospital the Mental Health Act, medication, varying levels of observation, and techniques to manage aggression may be used. In the community a network of support must be arranged with agreed roles and lines of communication. Education may be required for carers, and the Care Programme Approach implemented and the supervision register notified where appropriate. All

decisions must be recorded and dates of review agreed. Lastly decisions must be taken on who requires to be informed of the management plan.

This raises the question of when to breach confidentiality in the interests of public safety. There has been considerable debate on this topic in the last two decades since the Tarasoff decision (Tarasoff v.Regents of the University of California, 1976) in the USA. This found that it was the duty of mental health professionals to warn identifiable third parties of any risk posed to them by a patient. No such law exists in the UK but confidentiality may be breached when disclosure is necessary to protect the public interest, the risk is real rather than fanciful, and the risk involves danger of physical harm (W. v. Egdell, 1989). Good practice requires that we should warn potential victims. It should be recognised that failure to do so may lead to a Tarasoff ruling in some part of the UK and to the risk of legal action by a patient on the grounds of negligent care (Turner and Kennedy, 1997). McNeil et al (1998) reviewed the Californian statute requiring practitioners to warn the victim and inform the police of serious threats of violence. They found that the small numbers reported compared to the numbers detained suggested that this duty was infrequently fulfilled.

Forensic Psychiatry Facilities

High Security Psychiatric Care

The history of the English Special Hospitals has been controversial. Kaye (1998) provides a chronological, geographical and managerial history of the English Special Hospitals. More contentious papers have called for the closure of the Special Hospitals. Following publication of the Ashworth Inquiry into the inadequate care and treatment of patients (Department of Health, 1992), Bluglass (1992) argued that these patients should be housed in new local high security units of about 100-150 beds. The role of Special Hospitals was also queried by Murphy (1997) who contended that the placement of restricted patients in lower levels of security without compromising public safety had removed one of their primary functions; and by the second Ashworth Inquiry into the personality disorder unit (Department of Health, 1999).

The treatment and security needs of special hospital patients were examined in a 20% cross-sectional study (n=296) of all residents (Maden et al, 1993). Schizophrenia was the commonest diagnosis (55%) and 14% had other forms of psychosis. Nineteen percent were women. Most patients were admitted from prison although only 10% were serving a sentence. Two-thirds of patients had restrictions on discharge and just over a fifth were civilly detained. Admission was precipitated by a criminal conviction in 166 cases (56%). The research team identified a need for maximum security in 37% of cases, whereas the clinical team rated this at 50%. Bartlett (1993) in a wide ranging review on the special hospitals covering their history, population profile, treatment options, follow-up studies and management, again highlighted work demonstrating that only between 25 and 50% really need high security care. Taylor et al (1991) carried out a one day census of all 1,708 patients in the special Hospitals in March 1990. Using legal category of detention, it was found that 62.1% had a mental illness, 26.2% psychopathic disorder, 7.4% mental impairment and 4.3% severe mental impairment. Fifty-nine percent were said not to require any aspect of maximum security psychiatric care. Lack of suitable facilities has been demonstrated to be a factor in a recommendation for discharge (Green and Baglioni, 1997). Transfer of special hospital patients has been problematic for some time (Dell, 1980). A study examining factors determining length of stay at Broadmoor Hospital divided patients into two groups by legal category of detention (Dell et al, 1987). The psychopathic stayed longer if their index offence had involved violence particularly of a sexual nature or to a stranger. The mentally ill had an increased admission length if they remained symptomatic and index offence was not a factor.

A study of casenotes of all 1,740 patients resident in the Special Hospital in the first six months of 1993 was completed (Taylor et al, 1998). Fifty-eight percent had a functional psychosis, of which one-quarter also had a personality disorder; 26% had a personality disorder; and 16% had a learning disability. Schizophrenia was most strongly associated with violence to people.

A number of studies have examined outcome following discharge from high security care. Most recently, Buchanan (1998) found that 10.5 years after discharge 34% of former patients had been convicted of an offence, 15% of a violent offence, 7.5% of a sex offence and 15% of any serious offence.

A comparison was made of offender (n=321) and non-offender (53) male patients, defined by legal detention status, admitted to the State Hospital between 1966 and 1975 (Hughson, 1981). Non-offenders were more likely to have schizophrenia (51% / 28%) rather than personality disorder (9.5% / 30%) and more frequently displayed physical or verbal aggression, or damaged property. They had less frequently been sent to a custodial institution (38% / 62%); and were less frequently discharged (36% / 60%), although as the place of transfer is not noted this may be because offenders go back to court or prison. Self-injury was uncommon in both groups.

In Northern Ireland there are two forensic psychiatrists and no medium secure facilities. Exworthy (1998) reviewed the recent literature on institutions and services in forensic psychiatry and highlighted the issue of service gaps, particularly in the provision of long term medium secure beds. He stressed the need for comprehensive planning of services from the community to high security.

Local Forensic Facilities in Scotland

Smith (1997) studied the provision of locked units in Scotland. There were some 225 beds in total in an intensive psychiatric care unit (IPCU) or locked ward setting. One-quarter of these had no special security provisions such as an alarm system. In approximately one-fifth of units, the door was not consistently locked. Smith and Humphreys (1997) examined patients transferred during a twelve month period to one such unit, the IPCU at the Royal Edinburgh Hospital, in 1991. There were 131 transfer episodes involving 97 patients, one-third were women. Just over half the patients had a diagnosis of schizophrenia, a quarter of hypomania and under a tenth of personality disorder. The reasons for transfer included physical violence (30%), attempting to abscond (19%), verbal threat (17%), disruptive behaviour (16%), self-harm (12%) and damage to property (4%). Seventy percent spent less than 2 weeks

in that setting. Basson and Woodside (1981) examined 400 consecutive admissions over a 34 month period to a 13 bedded locked ward at the Royal Edinburgh Hospital which was the forerunner to the current IPCU. Their findings were largely similar.

Forensic psychiatry facilities in Scotland outside of the State Hospital consist largely of these IPCUs. Some areas have a day patient facility and forensic community psychiatric nurses, as well as an out-patient clinic. In different locations varying systems are in operation for linking with the criminal justice system. For example, in Glasgow there is a diversion system based at the Sheriff Court; in Edinburgh a 24 hour psychiatric service is available to the police stations; and in Tayside there is a liaison system with the prosecution service (the procurators fiscal). A psychiatric service is available to all prisons.

Prisons

Researchers have sought evidence of an association between crimes of violence and mental disorder in prisoners. The survey of psychiatric morbidity amongst prisoners in England and Wales (Singleton et al, 1998) interviewed 1 in 8 male remand prisoners (n = 250) and 1 in 34 male sentenced prisoners (n = 1,121) using a semi-structured clinical interview. They also interviewed 1 in 3 remand (187) or sentenced (584) women. They found a prevalence rate of psychosis of 10% in men on remand, 7% in sentenced men, and 14% in remand and sentenced women. Fifty-nine percent of remand and 40% of sentenced male prisoners had a neurotic disorder. Self-harm was common and over a quarter of remand and a fifth of sentenced prisoners had a history of this at some time. Seventy-eight percent of remand and 64% of sentenced male prisoners were found to have one or more personality disorders. Antisocial personality disorder was the commonest.

Birmingham et al (1996) excluded substance abuse from their survey of 548 remand prisoners. They found that 26% had a serious mental disorder including 4.2% with a psychosis. A study of the remand population in Scottish prisons (Davidson et al, 1995) found that 2.3% had a major psychiatric disorder, 14.1% showed significant signs of depression, 10.8% experienced anxiety and agitation, 22.4% had an alcohol

problem and over 70% had abused drugs in the past, almost one third intravenously. Cooke (1994), found an annual prevalence rate amongst prisoners in Scotland of 5.2% with a major psychological disorder.

Brooke et al (1996) interviewed 750 remand prisoners and found an overall rate of mental disorder of 63%, including substance misuse. Five percent of the population had a psychotic illness and 26% a neurotic illness. They estimated that almost one tenth required transfer to a hospital facility and that nearly one fifth required medical treatment in a prison setting.

Recent studies from abroad found varying rates of major psychiatric illness in prison populations from 2 to 6% (Bland et al, 1998; Teplin, 1994; Herrmen et al, 1991).

Self harm in the prison context remains a major issue. Bogue and Power (1995) examined suicide in Scottish prisons from 1976 to 1993 and found that remand prisoners were over represented as were prisoners serving longer sentences. Prison suicides have been noted to be approximately four times higher than national rates (Dooley, 1990). A similar study reviewing suicides in English and Welsh prisons over a 9 year period (n= 377) found that the initial period of imprisonment and young prisoner age (15 – 17 years) were high risk factors.

Clear unmet need had been identified in the prison population.

Systems

There is a general trend towards an increasingly systematic approach to the practice of medicine and its examination through audit. Accordingly, psychiatry has systems available for clinical management, including the longstanding use of mental health legislation. Consideration of these systems is highly relevant to the forensic psychiatric population resident in high security hospitals: a systems failure may have resulted in the index event leading to admission; a particular system may only be

implemented following such an event; or some systems may be activated during a patient's rehabilitation to reduce the risk of recidivism.

Homicide Inquiries

Some systems, such as the establishment of a homicide inquiry, only come into operation following a particular event. All homicides by people with mental disorder are followed by a mandatory inquiry in England and Wales. Findings from the inquiries have been collated (Zito Trust, 1996). Persistent themes include misdiagnosis, lack of follow-up, lack of communication between services/areas, poor record keeping and delays. The problem was usually a failure to act rather than a failure to assess. Petch and Bradley (1997) advanced this process by delineating general principles and action points for different professional groups and statutory bodies from these recommendations. The need to implement inquiry recommendations has been emphasised (Gunn, 1996). It has become a basic tenet of medical practice that new developments and interventions should be subject to the audit process. It therefore seems somewhat surprising that few inquiries have established a recommendation review. The adoption of such a process will reduce concerns that inquiries were about allocation of blame and scapegoating as opposed to bringing about genuine change.

There are differing views on the mandatory inquiry system: Eastman (1996) argues for their replacement by systematic audit and separation of the investigation of cause from determination of fault; while the Zito Trust and Grounds (1997) argue for their retention. It seems that the process of mandatory inquiries is ripe for change, and although the ongoing confidential inquiry into homicides and suicides by mentally ill people will fulfil this role to a degree, there is a need to incorporate a forum in which the family's views will be heard. Prins (1998) argues that following a homicide a report should be submitted to the Department of Health to decide if a case does require an independent external inquiry. He suggests this should be done by a central body such as the Mental Health Act Commission for England and Wales and such powers already exist for the Secretary of State to instruct an inquiry under the Mental Heath Act 1983. In Scotland the Mental Welfare Commission will

hold an inquiry following a homicide if a deficiency in care is suspected or if instructed to do so by the First Minister or Minister of Health. The Commission publishes the findings in an anonymised style in its annual report.

Guidelines

Guidelines by definition provide a systematic, and where possible an evidence based, approach to clinical practice. Health Boards and Trusts are now required to contain guideline implementation plans in their strategies. Previously clinicians had been wary of the use of guidelines fearing that their own clinical acumen might be reduced to the level of recipe following, or that their use might result in increased litigation. In forensic psychiatry clinical practice guidelines have been developed on the management of imminent violence (Royal College of Psychiatrists, 1998). The authors accepted that the research base was weak and acknowledged that they had to rely mainly on pre-existing guidance documents and current professional opinion. In spite of these limitations this comprehensive document deals well with issues of ward design and organisation, anticipating and preventing violence, and use of medication.

Care Programme Approach

The Care Programme Approach (CPA) has been mandatory in England and Wales since 1991 (Department of Health, 1990). There are four basic components: a multidisciplinary assessment of health and social care needs; an agreed recorded care plan; the nomination of a keyworker to co-ordinate the agreed plan; and systematic review of the patient's mental health and social functioning, and of the care programme. It is a formalised method of good clinical practice and a tool in the process of risk management in the community. Burns (1997) highlights the clinician's need to grasp and work with these concepts. Some have criticised these approaches (Marshall, 1996) but most authors welcome CPA (Phelan 1996, Burns 1996). In spite of the fact that CPA is designed for patients in the community one study showed that over two-thirds of general practitioners had not heard of it (Grace et al, 1996) and the need for G.P. training has been recognised (Bindman et al, 1997). Dissatisfaction with their involvement in the process has been expressed by

patients and carers (Phillips 1998, McDermott 1998, Allen 1998). CPA has given rise to information collection systems in some areas, such as a CPA support system that collects data on patient problems and satisfaction ratings (Bowers, 1997). The use of computers to assist clinicians in operating the system effectively and with safety nets has been recognised as essential (Ferguson, 1996). Wing et al (1998) have suggested that the Health of the Nation Outcome Scales (HoNOS) could be used routinely as part of CPA. Feeney et al (1998) described the practicalities of putting the care programme approach into operation. They found a six fold increase in patient contacts with a wider range of health professionals involved. Unsurprisingly increased resources were required to implement this approach and to continue to provide a reasonable service to those not in the programme. The initial tendency to spread the CPA net too wide lead to patchy implementation and the development in some areas of different levels of CPA. A thorough CPA should be directed towards those with a history of repeated relapse, of serious neglect or violence, or those who require multi-agency involvement.

Supervision Register

The Supervision Register was introduced to England and Wales in 1994 (circular HSG(94)5, Department of Health, 1994) following a number of widely publicised incidents. It is designed to ensure that individuals believed to present a risk of violence, self harm or self neglect receive the necessary care and supervision. It came into effect on 1st April 1995 and contains biographical data, and information on the nature and features of the recognised risk, staff involved and the care programme. In some areas it has been viewed as the most stringent level of CPA.

The introduction of Supervision Registers was opposed by the Royal College of Psychiatrists and others (Holloway, 1996). Baker (1997) reviewed the arguments voiced against its introduction: 1) the register lacks legal status having been created by circular and not legislation. 2) There is no appeal process for the patient 3) It breaches patients' confidentiality. 4) Doctors are required to police their patients. 5) It could lead to legal challenges to doctors. 6) It may tempt doctors to play safe and keep patients in hospital. 7) It may paradoxically lead to a relaxation of vigilance

due to a false sense of security. Baker argued that the impact of the supervision register was to reduce the threat to the community care policy, to distance the Department of Health from failure if incidents occur, to place responsibility at a local level and to safeguard the Government's reputation for managerial competence.

Others argued that doctors should take these measures and use and adapt them to the advantage of their patients and that the register would contribute to needs assessment, help to track wandering patients, share risk, and improve resource utilisation (Tyrer and Kennedy, 1995).

Research estimated that 6.4 patients per 100,000 population in England were being placed on the supervision register but that almost 10% had not been seen in the last month (Goldstraw and Salib, 1998). Staff stated that they were satisfied with their training and support for use of the register. The register was viewed as a potential method of risk control but could not alone prevent further incidents, especially if patients were not seen frequently.

Some psychiatrists have found that the inclusion criteria for CPA and the Supervision Register were too wide and have therefore set their own to improve care for a specific group and to reduce the risk of violence to others. As yet there is no evidence that placing people on a register will reduce that risk (McCarthy et al, 1995).

Isherwood (1996) examined the implementation of supervision registers in medium secure units and commented that CPA, but not the register, had lead to a significant increase in workload. There was no evidence of benefit, one case of prejudice, and patients living in the community resented its sudden imposition.

A questionnaire on consultant psychiatrists' views on the supervision register (Lowe-Ponsford et al, 1998) in South Thames region found that over half (52.3%) of those responding did not believe that the supervision register was likely to reduce

violence and over half were confident in their own predictions of violence. Most felt it had not changed their practice regarding admissions and discharges and while half thought it should be abolished a quarter believed that it should be retained. Vaughan (1998) however, found that although three-quarters of psychiatrists disliked the supervision register, it was not associated with a large increase in workload and patients did not react adversely to being placed on it.

Summary

In the earlier part of this decade a number of studies found that there was an association between crime, violence and mental disorder. This has been challenged by the recent findings of the MacArthur Violence Risk Assessment Study (Steadman et al, 1998). Link and Stueve (1998) have argued, however, that the varying results arise from different mental disorders carrying different risks of violence. Moreover, the evidence from Steadman (1998), and Modestin and Ammann (1996) suggests a strong association between the acute stage of schizophrenia and violence. While overall rates of offending in those with mental disorder may be similar to those seen in well matched population controls, this may obscure increased incidence of some crimes (such as crimes of violence and homicide) and decreased incidence of others (such as traffic offences and pub brawls). The contribution made by mental disorder to the risk of offending is small when compared to other effects such as age, socio-economic origin, marital status, employment level, substance misuse, antisocial traits and history of violence.

There is clear evidence of an association between substance abuse and criminality. An abnormality of the serotonergic system or childhood delinquency may be common precursors for both. The presence of an additional diagnosis, such as schizophrenia or ASPD, appears to have a synergistic effect on aggression. A failure to adequately address substance abuse problems in criminal or psychiatric populations is an ongoing problem. Treatment of substance abuse can improve forensic outcome and is an important part of risk management. Hair analysis may develop as the screening tool of choice although the timescale from drug

consumption to testing is approximately one month because of the period required for hair growth. Further research is required on the role of serotonin in substance abuse and aggression, and into the potential use of selective serotonin reuptake inhibitors. Research into the pathophysiological basis of violence is still at an early stage. Given the protean origins of violent acts it is unlikely that a universal marker or abnormality will be found.

The concept of risk provides a framework for formalised assessment and management. Actuarial methods of assessment have limitations, primarily because of the static nature of the assessment and the high false positive rate. They have a contribution to make to research and it may be that the further development of instruments incorporating mental state and predictor variables will prove useful, particularly in providing a structured method of risk assessment.

As clinicians we do not claim to be able to predict risk in the long term but rather structure our management plans to allow for regular re-assessment in cases with increased risk. Systems, such as the care programme approach or guidelines, can be used to assist in the management of that risk. There is a requirement for the necessary technology to provide the administrative support and audit capabilities necessary to manage these systems well. It is important for practitioners to be involved in the development of new systems or to critically appraise those imposed. The literature demonstrates that it is possible to implement national initiatives in ways that meet local perceptions of need.

Methodologies used in the development of evidence based guidelines stress the importance of attaching different weights to findings from research according to the robustness of the study design. It is a reflection on the current status of research in forensic psychiatry that a high proportion of publications would only be considered to meet the lower levels of evidence required in the development of such guidelines. The challenge for the future must be for us to seek answers to the complex questions we meet in clinical practice through well designed studies from which we can confidently draw conclusions relevant to our own patients.

Chapter I - The State Hospital Survey

Aims

1. To describe the nature of the patient population in the State Hospital.
2. To delineate common identifiable factors which act as precipitants to referral and subsequent admission to the State Hospital.
3. To determine if all current patients require the special facilities of the State Hospital.
4. To ascertain local service perceptions of and involvement with State Hospital patients.

Method

Information was collected from the casenotes of all patients resident in the State Hospital between the 25th August, 1992 and the 30th September, 1993. Each patient was asked to take part in a clinical interview and details of their drug charts were recorded at that time. In addition, patients underwent cognitive testing. Interviews were carried out with each patient's responsible medical officer and nursing keyworker. The nature of the information gathered, outlined in Tables 1A and B, was based on studies of the English Special Hospitals (Maden et al, 1993), a follow-up study on the Disabilities and Circumstances of Schizophrenic Patients (Johnstone et al, 1991), questionnaires such as the standardised psychiatric assessment for chronic psychotic disorders (Krawiecka et al, 1977) and the scale for targeting abnormal kinetic effects (Wojcik et al, 1980), and original design.

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Table 1A - Methodology

Source	Information obtained	Instrument used
Casenotes	demographic details legal status responsible health board psychiatric history e.g. age at first admission number of admissions total length of stay in hospital drug history - recorded the maximum dose and drug name of oral/depot neuroleptic medication and the use of anti-cholinergics, clozapine, lithium, anti-depressants, benzodiazepines, anti-epileptics and anti-libidinal preparations past medical history forensic history admission details social and personal history family history diagnosis(es) clinical features	St. Louis Criteria (Feighner, 1972) PSE Syndrome Checklist (Wing *et al*, 1974)
Drug charts	recorded the current dose and preparation name of all medication for both psychiatric (as outlined in drug history) and physical illness	
Patient interview - by psychiatrist	mental state assessment movement disorder examination	Standardised psychiatric assessment for chronic psychotic disorders (Krawiecka *et al*, 1977) Mania Rating Scale (Bech *et al*, 1978) Depression Rating Scale (Montgomery and Asberg, 1979) Assessment of Involuntary Movements Scale (AIMS, Guy, 1976) Scale for Targeting Abnormal Kinetic Effects (TAKE; Wojcik *et al*, 1980)
- by psychologist	cognitive testing pre-morbid intellectual assessment current intellectual assessment	National Adult Reading Test (Nelson, 1982) Diagnostic and Attainment Test (Schonell and Schonell, 1950) QUICK Test (Ammons and Ammons,1962)
RMO interview	diagnosis(es) clinical problems treatment needs security requirements transfer / discharge plans	

Keyworker interview	social assessments	Disability Assessment Schedule subsection on nursing observations of the patient in hospital (Jablensky *et al*, 1980)
Consultant Questionnaire	contact with and views of the State Hospital information on available local facilities	

Table 1B The 38 PSE items for measuring lifetime psychiatric syndromes are as follows:-

Name	Scoring
Nuclear syndrome	0,1,2,3
Catatonic syndrome	0,2,3
Incoherent speech	0,2,3
Residual syndrome	0,2,3
Depressive delusions and hallucinations	0,2,3
Simple depression	0,1,2,3
Obsessional neurosis	0,2,3
General anxiety	0,2,3
Situational anxiety	0,2,3
Hysteria	0,2,3
Affective flattening	0,2
Hypomania	0,1,2,3
Auditory hallucinations	0,2
Delusions of persecution	0,1,2
Delusions of reference	0,1,2,3
Grandiose and religious delusions	0,1,2,3
Sexual and fantastic delusions	0,1,2,3
Visual hallucinations	0,2
Olfactory hallucinations	0,2,3
Overactivity	0,2,3
Slowness	0,2,3
Non-specific psychosis	0,1,2,3
Depersonalisation	0,2,3
Special features of depression	0,2,3
Agitation	0,2
Self-neglect	0,2
Ideas of reference	0,2
Tension	0,2,3
Lack of energy	0,2
Worrying etc.	0,2,3
Irritability	0,2,3
Social unease	0,2,3
Loss of interest and concentration	0,2,3
Hypochondriasis	0,2
Other symptoms of depression	0,2,3
Organic impairment	0,2
Subcultural delusions or hallucinations	0,2
Doubtful interview	0,2

Two research workers, a psychiatrist and a psychologist, were trained in the use of the various questionnaires. Both carried out casenote reviews and more than 20% were duplicated independently to ensure good inter-rater reliability. The research psychiatrist was joined for 5% of patient interviews by an external rater who scored questionnaires independently. Good inter-rater reliability (rho 0.88) was achieved.

Doses of individual neuroleptic medication were recorded and an equivalent chlorpromazine dose calculated.

Table 2 - Chlorpromazine equivalents

Drug	Dose 1 (mg)	Dose 2 (mg)
Chlorpromazine	100	500
Oral:		
Droperidol	10	50
Fluphenazine	2.5	10
Haloperidol	5	25
Remoxipride	75	400
Sulpiride	200	1000
Thioridazine	100	500
Trifluoperazine	5	25
Zuclopenthixol	25	125
Depot (2 weekly):		
Flupenthixol Decanaoate	20	80
Fluphenazine Decanoate	12.5	50
Haloperidol Decanoate	50	200
Pipothiazine Palmitate	25	100
Zuclopenthixol Decanoate	80	400

(Foster P. 1989; Bazire S., 1991; Information News Riverside Health Authority, 1991; Johnstone *et al*, 1991)

A questionnaire was sent to every consultant in adult general psychiatry, forensic psychiatry and learning disability in Scotland and Northern Ireland. It sought information about the consultants' contact with and views of the State Hospital, as well as inquiring into local facilities. Names and addresses of consultants were obtained from the Information and Statistics Division of the Management Executive of the National Health Service Scotland and the Department of Health and Social Services in Northern Ireland.

At the beginning of the survey there were 230 patients in the State Hospital, by the end there were 203. To prevent loss of patients to the study through transfer or discharge, data collection began at the pre-transfer ward and ended at the male admission ward. It must be noted that the admission ward can admit and transfer within a few weeks if the State Hospital is not deemed the most suitable placement or if the patient can no longer be legally detained.

Results

Demographic Details

There were 241 patients in the survey. Their average age was 34.6 years (range 17-67 years). Two hundred and thirteen (88.4%) were male and 28 (11.6%) female. The majority of patients were Caucasian, with two patients of Asian origin and one of Scottish-Ghanaian. French was the first language of one patient but for all others this was English. Only 12 (5%) were in a sustained relationship, 25 (10.4%) were divorced or separated, 4 (1.7%) widowed and the remainder single. Thirty-three patients had 60 children in total. Over half were known to originate from socio-economic groups III-M, IV and V, although information was not available on over a fifth of fathers and a further 10% were economically inactive due to unemployment, ill health or retirement. One hundred and eighty-five (76.8%) patients had not recently worked. Eleven (4.6%) had been in skilled employment prior to admission. There was considerable variation in the admission rate to the State Hospital per 100,000 health board area population (Figure 1).

Diagnostic Aspects

Based on the St. Louis classification (Feighner et al, 1972) 103 patients fulfilled operational criteria for one diagnosis, 79 had 2, 40 had 3 and 19 had 4 diagnoses. In total there were 457 diagnoses for 241 patients. These diagnoses consisted of: schizophrenia (36.8%), depression (1.3%), mania (0.4%), secondary depression (5.3%), anti-social personality disorder (14%), mental retardation (9%), organic brain syndrome (2.2%), alcoholism (16.8%), drug dependence (12%) and undiagnosed psychiatric illness (2%). One patient (0.2%) had no diagnosable psychiatric illness. Schizophrenia was the most common diagnosis. There were 60 patients with a diagnosis of schizophrenia alone and no fewer than 12 patients with schizophrenia, personality disorder, alcohol and drug abuse. Typically third and fourth diagnoses were alcohol or drug abuse.

Figure 1 - Admissions by responsible Health Board

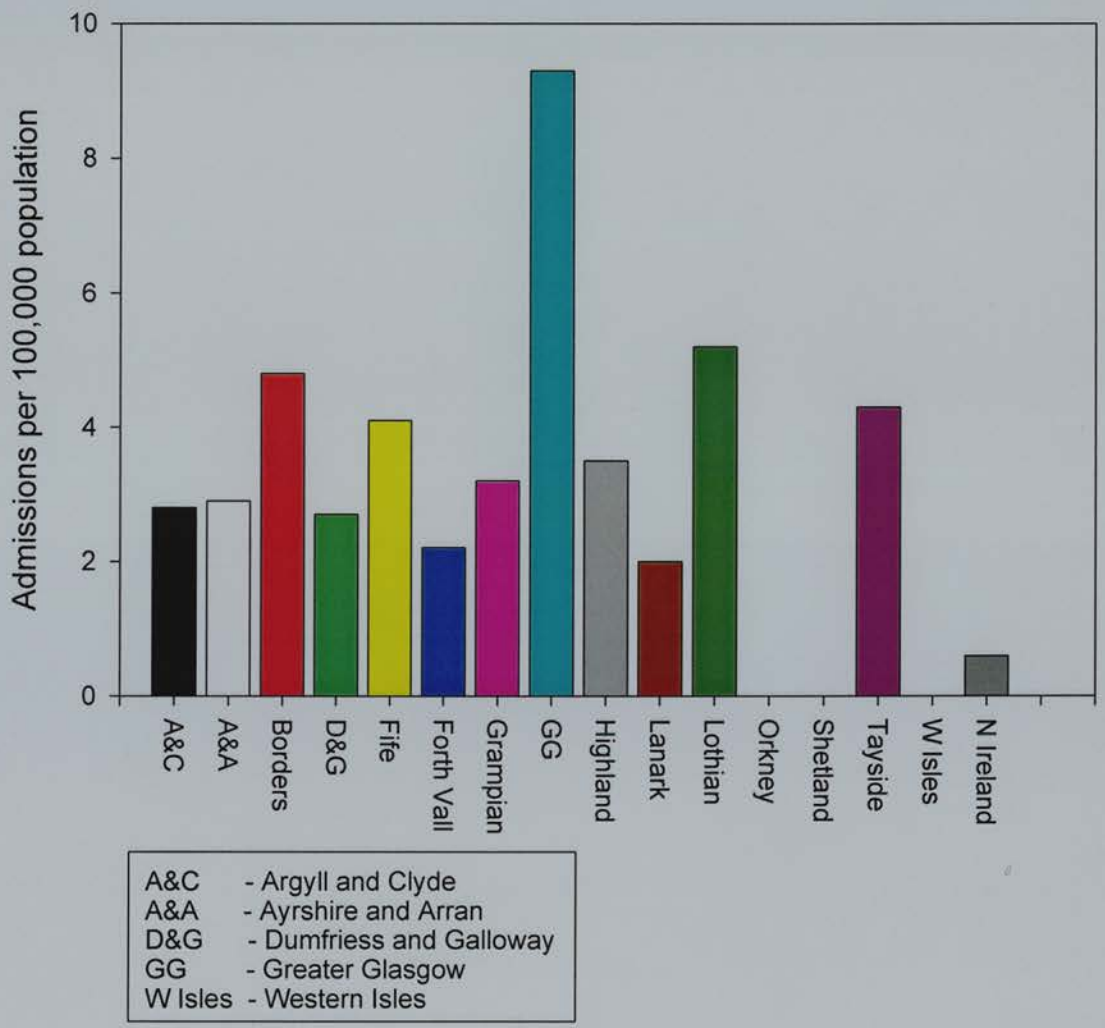


Table 3 - Primary diagnosis

Primary diagnosis	%
Schizophrenia	70.1
Depression	2.5
Mania	0.8
Mental retardation	13.3
Anti-social personality disorder	5.4
Organic brain syndrome	1.7
Alcoholism / drug abuse	2.1
Undiagnosed psychiatric illness	3.7
None	0.4

Table 3 shows the primary diagnosis assigned to each patient. A hierarchy was used whereby schizophrenia was prioritised above all other diagnoses (Catego Programme, Wing et al, 1974) followed by the others as listed. The finding of 169 (70.1%) patients with a primary diagnosis of schizophrenia, according to the St. Louis Criteria (Feighner, 1972), was supported by data from the Present State Examination Syndrome Checklist (Wing et al, 1974). One hundred and forty-five (60.2%) patients had nuclear symptoms of schizophrenia with 175 (72.6%) experiencing delusions of persecution and 166 (68.9%) auditory hallucinations.

Circumstances of Admission

One hundred and five (43.6%) patients were admitted from court, 50 (20.8%) from prison and 86 (35.7%) from another hospital. Just under half were admitted following an offence, the remainder were transferred from prison or came from a local psychiatric facility following violence, menace, self-harm, absconding, fire raising or sexually inappropriate behaviour. Where an offence did occur these were generally serious (Table 4). Alcohol or drug intoxication was implicated in almost a fifth of offences or behaviour leading to admission and withdrawal in over a tenth. Another 10% required admission due to failure to take medication with subsequent deterioration in mental health. Over half the patients' disturbed behaviour or offence was thought to be psychotically driven. Other precipitants involved arguments with, for example a partner or parent.

Table 4 - Index offence

Index offence	%
No offence	51.5
Murder - original charge: found insane in bar of trial or acquitted on the grounds of insanity	6.2
Culpable homicide	10.4
Attempted murder	5.8
Serious assault	5.4
Rape	1.2
Other sexual assault	1.7
Lewd & libidinous practices	2.5
Fire-raising	2.5
Breach of the peace	5.4
Other	7.5

Legal Status

Almost 40% were detained under the Mental Health (Scotland) Act 1984, more on a civil treatment order (53/22%) than on a transfer order / direction from prison (44/18.3%). The remainder were detained under the Criminal Procedure (Scotland) Act 1975 (144/59.8%). Eight (3.3%) were remanded to hospital awaiting trial, 28 (11.6%) had been found insane in bar of trial or acquitted on the grounds of insanity, 4 (1.7%) were on interim hospital orders, 2 (0.8%) had been remanded to hospital for a medical report, 2 (0.8%) were detained under admission to a state hospital, and 100 (41.5%) were subject to a hospital order with 55 (22.8%) having additional restrictions on discharge.

Historical Aspects

Aspects of Psychiatric History

Most patients had a relatively long psychiatric history. The mean number of psychiatric hospital admissions was 5 (range 1-46) and patients were on average 21 years old at the time of their first period of in-patient care. The mean length of stay in psychiatric hospital, including the current admission, was 9.3 years (range 1 month-45 years). One hundred and forty-eight (61.4%) patients had at some time self-harmed. This varied from life threatening attempts to minor scratches on the wrists on one or more occasions.

Examination of casenotes showed that 215 (89.2%) patients had at some stage been treated with oral neuroleptics and 172 (71.4%) with depot preparations. Twenty-five (10.4%) had never received any form of neuroleptic medication and 171 (71.0%) had been prescribed both oral and depot neuroleptic preparations. Other drugs previously prescribed included anticholinergics (61.8%), antidepressants (36.1%), benzodiazepines (33.2%), anti convulsants (28.6%), lithium (22.8%) and anti libidinal agents (8.7%). Fifty-five (22.8%) patients had received a course of electroconvulsive therapy but none had undergone any form of psychosurgery.

The average length of the current State Hospital admission was almost 5 years (range 1 month-30.5 years). Fifty-four (22.4%) patients had had at least one previous State Hospital admission (range 1-6). Thirty (12.5%) patients had been refused admission to the State Hospital in the past. The average time between refusal and admission was 2.5 years (range 1 month - 11 years). Thirteen (5.4%) patients had been both refused admission in the past and had a previous admission.

Additional Historical Aspects

Just over half the patients (132/54.8%) had a history of a chronic physical disorder; such as asthma, psoriasis, peptic ulceration, hypertension, diabetes mellitus and in one case Huntington's Chorea. These included 42 patients (17.4%) with a history of epilepsy.

One hundred and seventeen (48.5%) patients had a history of heavy or abusive use of alcohol and 113 (46.9%) had used illegal drugs on at least one occasion, 23 (9.5%) by intravenous injection. Seventy-eight (32.4%) used more than one substance whereas 35 (14.5%) abused a single drug. A wide range of substances were taken, cannabis being the most common (38.2%). Other drugs of abuse included amphetamine (15.4%), hallucinogens (24.5%), barbiturates (4.1%), benzodiazepines (10%), solvents (14.9%), and opiates (15.4%). Information was unavailable on alcohol use in 14.1% of cases. If a drug of abuse was not specified it was presumed it was not used. Eighty patients (33.2%) were known to abuse both alcohol and drugs.

Almost three-quarters had experienced an adverse event in childhood such as parental separation, abuse of the patient or death of a parent. Forty-two (17.4%) were said to have had some form of perinatal problem and 51 (21.2%) were reported to have abnormal infant development. A sixth of patients had a definite history of sexual abuse and a similar number of physical abuse. A sixth required remedial education and one-fifth went to an approved or residential school. Only 2.1% of mothers and 1.2% of fathers had a known history of schizophrenia but 10% of mothers and over a quarter of fathers had a history of alcohol or drug abuse. In addition the following disorders were found in the parents: affective illness (mother 4.6%, father 1.7%), unspecified psychosis (m. 0.8%, f.0.4%), organic disorder (m. 1.7%, f. 1.2%), learning disability (m. 3.3%), unspecified abnormality (m. 2.5%, f. 2.1%).

The majority of patients (199/82.6%) had a history of criminal activity, the average number of previous convictions being 12 (range 1-72). Notice of previous offences was available in 72.4% of cases. Types of offence are listed in Table 5.

Table 5 - Previous crimes/offences

Type	%
Homicide	1.6
Violent non-sexual crime	11.9
Sexual crimes	3.4
Crimes of dishonesty	31.2
Other crimes - includes fire-raising and drug offences	5.1
Offences - includes breach of the peace, motor offences and petty assault	46.8

Drug Chart

Information was recorded from the drug charts of 234 patients. Of these at the time of interview 146 (62.4%) patients received regular oral neuroleptics with an average daily chlorpromazine equivalent dose of 773 mg (range 40-3600) and 115 (49.1%) were prescribed depot neuroleptics with an average daily chlorpromazine equivalent dose of 972mg (range 125-5000). Eighty-seven (37.2%) were receiving both oral and depot neuroleptic medication on a regular basis (average daily dose 2033mg {range 388-6300}), 59 (25.2%) oral alone, 1 (0.4%) depot alone, 27 (11.5%) depot

plus as required oral neuroleptics, 50 (21.4%) as required neuroleptics alone and 10 (4.3%) were prescribed nothing. Twenty-two (9.4%) were taking clozapine (average daily dose 512mg {range 250-900}); 22 (9.4%) lithium (average daily dose 1350mg {range 400-1750}); 37 (15.8%) an antidepressant; 11 (4.7%) an hypnotic, 39 (16.7%) an anti convulsant, 49 (20.9%) an anti-Parkinsonian drug and 3 (1.3%) an anti libidinal. One hundred and thirty-nine (59.4%) were on medication for a variety of physical problems.

Patient Interview

By Psychiatrist

Findings from interview and examination are outlined in Tables 6-9. Of 241 patients, 227 (94.2%) took part, 8 (3.3%) refused and 6 (2.5%) had been transferred elsewhere. The Bech-Rafaelsen Scale for mania revealed minimal positive scores. One hundred and fourteen patients (50.2%) had positive psychotic symptoms. Negative schizophrenic symptoms occurred but were less common.

Table 6 - Results of the individual items of the Krawiecka scale

Item	Mean	0 n(%)	1 n(%)	2 n(%)	3 n(%)	4 n(%)
Depression	0.76	134 (59.0)	23 (10.1)	60 (26.4)	10 (4.4)	-
Anxiety	0.52	164 (72.2)	17 (7.5)	36 (15.9)	10 (4.4)	-
Incongruity of Affect	0.28	200 (88.1)	-	18 (7.9)	8 (3.5)	1 (0.4)
Flattening of Affect	1.01	141 (62.1)	-	40 (17.6)	35 (15.4)	11 (4.8)
Retardation	0.19	210 (92.5)	-	9 (4.0)	6 (2.6)	2 (0.9)
Hallucinations	0.94	167 (73.6)	4 (1.8)	3 (1.3)	9 (4.0)	44 (19.4)
Delusions	1.73	121 (53.3)	-	6 (2.6)	20 (8.8)	80 (35.2)
Incoherence of Speech	0.38	194 (85.5)	-	15 (6.6)	16 (7.0)	2 (0.9)
Poverty of Speech/Muteness	0.10	217 (95.6)	2 (0.9)	5 (2.2)	1 (0.4)	2 (0.9)

Possible range for each item is 0-4 (higher scores indicating greater disability)

Table 7 - Results of the individual items of the Montgomery-Asberg scale

Item	Mean	0 n(%)	1 n(%)	2 n(%)	3 n(%)	4 n(%)	5 n(%)	6 n(%)
Apparent sadness	0.25	202 (89.0)	4 (1.8)	12 (5.3)	7 (3.1)	2 (0.9)	0	0
Reported sadness	0.81	140 (61.7)	19 (8.4)	47 (20.7)	13 (5.7)	7 (3.1)	1 (0.4)	0
Inner tension	0.59	167 (73.6)	10 (4.4)	28 (12.3)	19 (8.4)	3 (1.3)	0	0
Reduced sleep	0.32	203 (89.4)	1 (0.4)	10 (4.4)	5 (2.2)	4 (1.8)	3 (1.3)	1 (0.4)
Reduced appetite	0.12	214 (94.3)	4 (1.8)	4 (1.8)	4 (1.8)	1 (0.4)	0	0
Concentration difficult	1.36	117 (51.5)	3 (1.3)	44 (19.4)	37 (16.3)	24 (10.6)	2 (0.9)	0
Lassitude	1.09	126 (55.5)	7 (3.1)	58 (25.6)	21 (9.3)	4 (6.2)	1 (0.4)	0
Inability to feel	0.19	209 (92.1)	1 (0.4)	12 (5.3)	2 (0.9)	3 (1.3)	0	0
Pessimistic thoughts	0.37	187 (82.4)	5 (2.2)	27 (11.9)	6 (2.6)	2 (0.9)	0	0
Suicidal thoughts	0.52	180 (79.3)	2 (0.9)	28 (12.3)	9 (4.0)	8 (3.5)	0	0

Possible range for each item is 0-6 (higher scores indicating greater disability)

Table 8 - Results of individual AIMS items

Item	Mean	0 n(%)	1 n(%)	2 n(%)	3 n(%)	4 n(%)
Muscles of facial expression	0.02	225 (99.1)	0	1 (0.4)	1 (0.4)	0
Lips and perioral area	0.01	226 (99.6)	0	0	1 (0.4)	0
Jaw	0.19	207 (91.2)	3 (1.3)	11 (4.8)	6 (2.6)	0
Tongue	0.44	188 (82.8)	10 (4.4)	8 (3.5)	11 (4.8)	10 (4.4)
Upper Limbs	0.26	205 (90.3)	0	6 (2.6)	16 (7.0)	0
Lower Limbs	0.04	223 (98.2)	0	2 (0.9)	2 (0.9)	0
Neck, shoulders, hips	0.03	224 (98.7)	0	2 (0.9)	1 (0.4)	0
Severity of abnormal movement	0.57	166 (73.1)	13 (5.7)	28 (12.3)	19 (8.4)	1 (0.4)
Incapacity by abnormal movement	0.30	180 (79.3)	27 (11.9)	18 (7.9)	2 (0.9)	0
Awareness of abnormal movement	0.09	211 (93.0)	12 (5.3)	4 (1.8)	0	0

Possible range for each item is 0-4 (higher scores indicating greater disability)

Table 9 - Results of individual TAKE items

Item	Mean	0 n(%)	1 n(%)	2 n(%)	3 n(%)	4 n(%)
Bradykinesia	1.11	124 (54.6)	6 (2.6)	46 (20.3)	51 (22.5)	0
Rigidity	0.45	183 (80.6)	4 (1.8)	22 (9.7)	18 (7.9)	0
Tremor	1.61	81 (35.7)	6 (2.6)	67 (29.5)	66 (29.1)	0
Autonomic side-effects	0.66	157 (69.2)	7 (3.1)	47 (20.7)	15 (6.6)	7 (3.1)
Akathisia	1.10	118 (52.0)	6 (2.6)	66 (29.1)	36 (15.9)	1 (0.4)
Overall severity of side-effects	1.64	40 (17.6)	45 (19.8)	100 (44.1)	41 (18.1)	1 (0.4)
Incapacitation by side-effects	0.80	90 (39.6)	98 (43.2)	33 (14.5)	6 (2.6)	0
Awareness of side-effects	0.50	131 (57.7)	79 (34.8)	16 (7.0)	1 (0.4)	0

Possible range for each item is 0-4 (higher scores indicating greater disability)

By Psychologist

Of the 241 study subjects 183 (75.9%) participated in cognitive testing, although not all were able to complete the full battery of tests. Reasons for non-participation included: discharge or transfer of patient, refusal to participate, severe current behavioural disturbance, inability to co-operate because of features of the mental state and presence of a handicapping condition such as mutism or profound deafness. Results were obtained on 118 subjects. The mean current intelligence quotient, assessed using the Quick Test (Ammons and Ammons, 1962), was 94.76 (range 70-130) and the mean premorbid I.Q., assessed using the Schonell (Schonell and Schonell, 1950) and NART (Nelson, 1982) tests, was 102.5 (range 81-124). Those with a diagnosis of mental retardation and organic brain syndrome or those with a Quick test score of less than 65 and a NART score of less than 80 were excluded as the validity of these tests is unreliable at lower extremes.

Interview with Responsible Medical Officer

An interview with each patient's responsible medical officer (RMO) was completed for 225 of the 241 study patients. Two patients had died and 14 had been transferred prior to interview. RMOs described the main diagnosis as a psychotic illness in 152 (67.6%) cases, of which 133 (59.1%) were said to be schizophrenia. Eight (3.6%)

had an affective illness, 36 (16%) a learning disability, 19 (8.4%) a personality disorder, 4 (1.8%) an organic disorder, 1 (0.4%) DeClérambault Syndrome, 3 (1.3%) sexual problems and 2 (0.9%) attracted no diagnosis. Nineteen (8.4%) were said to be experiencing only positive symptoms of psychosis, 29 (12.9%) negative symptoms alone and 90 (40%) both. Persisting treatment problems are listed in Table 10. It was predicted that over the next year 119 (52.9%) patients would require both oral and depot preparations, 49 (21.8%) oral alone and 16 (7.1%) depot alone. Forty-one (18.2%) patients were thought to need neither. It was anticipated that 126 (54%) patients would show some or considerable improvement in the next year, 93 (41.3%) no change and 5 (2.1%) some or considerable deterioration. For one (0.4%) patient the prognosis was said to be unknown.

Table 10 - Persisting treatment problems

	%
Insufficient response to medication	48.0
Non-compliance with medication	14.7
Lack of co-operation with staff	26.2
Lack of co-operation with therapies	21.3
Failure to relate to others	47.6
Self-harm	9.3
Persistent aggression	24.0
No persisting treatment problem	0.0

RMOs were asked what problems would occur if the patient was discharged on the day of interview. Of note was that 92 (41%) were considered to be dangerous if discharged, 32 (14.2%) it was thought would offend only in a major way, 97 (43.1%) in a minor way alone and 23 (10.2%) in both a major and minor way. Of those thought to be dangerous the RMOs were concerned that 52 would commit a major offence and 54 a minor offence. An inquiry was made to the RMO concerning patient placement over the course of time. It was stated that 44.9% of patients would require continued detention in the State Hospital for less than one year. This fell to 17.8% for more than two years and 1.3% by the end of five years.

Patients' security requirements as assessed by the RMOs are displayed in Table 11 as is the stage of their transfer or discharge process.

Table 11 - Security needs assessment (n=225)

	(%)
Patient said to require the full security provided by the State Hospital	84 (37.3)
Patients said not to require the full security provided by the State Hospital	120 (53.3)
No view expressed	21 (9.3)

Transfer / discharge process initiated

	%
Yes	78 (34.7)
No	135 (60.4)
Imminent	11 (4.9)

Table 12 - Comparison of security needs assessment and transfer / discharge process initiation

	Transfer / discharge process initiated		
Security needs assessment	No	Yes	Imminent
Do not require full security provided by the State Hospital	52 (23.1%)	75 (33.3%)	9 (4.0%)
Do require full security provided by the State Hospital	64 (28.4%)	5 (2.2%)	9 (4.0%)
Uncertain	4 (1.8%)	4 (1.8%)	3 (1.3%)

Table 12 highlights the consistencies and discrepancies between security needs assessment findings and initiation of transfer or discharge procedure. For the 52 (23.1%) patients said not to require the full security of the State Hospital for whom transfer or discharge proceedings had not been implemented the following reasons were offered: lack of suitable alternative facilities 32 (55.2%), clinical team objection 2 (3.4%), counter- therapeutic to move now 2 (3.4%), Secretary of State for Scotland objection expected 1 (1.7%), family objection 1 (1.7%) and other reasons 20 (34.5%). These other reasons consisted of 2 life sentence prisoners, 13 patients with a recent change in RMO and 5 patients thought specifically to require the facilities of a regional secure unit. Five patients were said to need the security of the State Hospital but the transfer/discharge process had been initiated. No reason has been forthcoming for this discrepancy.

Keyworker Interview

Two hundred and twenty-eight interviews were carried out with nursing staff. One patient had died and 12 had been transferred prior to interview. Results of the Disability Assessment Schedule Nurses' Section are presented in Tables 13-17.

Table 13 - Nurses' observation of in-patients' behaviour in the ward over past month (nurses' section of the Disability Assessment Schedule) (n = 185)

	No dysfunction	Minimum dysfunction	Obvious dysfunction	Serious dysfunction	Very serious dysfunction	Maximum dysfunction
Self-care	110 (59.5)	34 (18.4)	23 (12.4)	11 (5.9)	3 (1.6)	4 (2.2)
Underactivity	111 (60.0)	28 (15.1)	22 (11.9)	14 (7.6)	7 (3.8)	3 (1.6)
Slowness	138 (74.6)	18 (9.7)	23 (12.4)	2 (1.1)	1 (0.5)	3 (1.6)
Social withdrawal	114 (61.6)	35 (18.9)	17 (9.2)	9 (4.9)	6 (3.2)	4 (2.2)

Table 14 - Nurse's observation of in-patients' behaviour in the ward during past week only (nurses' section of the Disability Assessment Schedule) (n = 228)

	Number (%) of patients for whom behaviour was recorded as:		
	Normal / not present	Present in morbid degree	Present in severe degree
Slowness	170 (74.6)	45 (19.7)	13 (5.7)
Underactivity	150 (65.8)	59 (25.9)	19 (8.3)
Overactivity	159 (69.7)	53 (23.2)	16 (7.0)
Reduced conversation	194 (85.1)	31 (13.6)	2 (0.9)
Social withdrawal	132 (57.9)	73 (32.0)	23 (10.1)
Lack of leisure interests	175 (76.8)	36 (15.8)	17 (7.5)
Irrelevant talk	163 (71.5)	28 (12.3)	36 (15.8)
Posturing and mannerisms	164 (71.9)	22 (9.6)	42 (18.4)
Violent behaviour	172 (75.4)	32 (14.0)	24 (10.5)
Remaining in bed	137 (60.1)	53 (23.2)	38 (16.7)
Abnormal dress and general appearance	147 (64.5)	70 (30.7)	11 (4.8)
Abnormal mealtime behaviour	207 (90.8)	17 (7.5)	4 (1.8)

Table 15 - Nurses' opinions of in-patients

(nurses' section of the Disability Assessment Schedule) (n = 228)

Situation	Number (%) of patients Not Suitable	Suitable	Not Applicable
To do work in hospital	77 (33.8)	151 (66.2)	-
To posses matches	84 (36.8)	144 (63.2)	-
To visit relatives	72 (31.6)	156 (68.4)	-
To go out with opposite sex	78 (34.2)	150 (65.8)	-
To posses scissors	-	-	228 (100.0)
To handle money	75 (32.9)	153 (67.1)	-
To work outside hospital	-	-	228 (100.0)
To be discharged	165 (72.4)	63 (27.6)	-
To be in open room	128 (56.1)	100 (43.9)	-

Table 16 - Patients' level of function on the ward

(nurses' section of the Disability Assessment Schedule) (n = 228)

Activity	Number (%) of patients
Housekeeping on ward	
None	51 (22.4)
very little	65 (28.5)
Fair	70 (30.7)
above normal	42 (18.4)
not applicable	-
Work therapy	
None	104(45.6)
Supervised	39 (17.1)
kitchen, etc.	68 (29.8)
service department	17 (7.5)
individual work	-
Outside	-
not applicable	-
Occupational therapy	
None	106 (46.5)
1-2 hours	-
3-4 hours	-
Occasional	12 (5.3)
Daily	103 (45.2)
Industrial	7 (3.1)
not applicable	-
In-patient social therapy	
None	76 (33.3)
1-2 hours	-
3-4 hours	-
Occasional	69 (30.3)
Daily	83 (36.4)
not applicable	-

Table 17 - Patients' contact with outside world

(nurses' section of the Disability Assessment Schedule) (n = 228)

Type of Contact	Number (%) of patients
Visits during past three months	
no visits	79 (34.6)
less than once a week	96 (42.1)
about once a week or more often	53 (23.2)
patient in hospital less than a week	-
not applicable	-
Visits home during past three months	
no visit home during past three months	190 (83.3)
visited home once	29 (12.7)
visited home more than once	9 (3.0)
patient in hospital less than a week	-
not applicable	-
Need for supervision for security reasons	
not allowed outside ward without escort	129 (56.6)
only allowed out of ward when supervised	99 (43.4)
can use hospital grounds without asking permission	-
can go outside hospital with permission	-
can go outside hospital without asking permission	-
not applicable	-
Reasons for intensive supervision	
no constant supervision needed	149 (65.4)
may try to escape	2 (0.9)
may wander away	3 (1.3)
may be aggressive or threatening	36 (15.8)
may be destructive (to property)	3 (1.3)
appearance may be frightening to others	1 (0.4)
risk of suicide	8 (3.5)
other reason	21 (9.2)
not applicable	5 (2.2)

One hundred and seven (46.9%) patients had exhibited violence during the previous 12 months. This was considered serious, for example punching, kicking or biting in 48 (21.1%) cases and very serious, life threatening, in 7 (3.1%) cases. Serious injuries such as lacerations requiring sutures, fractures or head injury were inflicted by 12 (5.3%) patients and minor injuries, bruising or scratches, by 32 (14%) patients in the past year. Eight (3.5%) of these patients had inflicted both major and minor injuries. Forty-six (20.2%) patients had damaged property over the same time period and 13 (5.8%) of these also caused injury to others.

Forty-two (18.4%) patients in the past year had attempted suicide or self-injured and 25 (11%) were thought to have used illicit drugs.

Consultant Questionnaire

Three hundred and five questionnaires were dispatched to consultants. Two hundred and fifty-eight (84.6%) were returned and 245 (80.3%) were valid. Thirteen (4.3%) were invalid as the consultant had retired or was in a sub-speciality unrelated to forensic psychiatry. Forty-seven (15.4%) made no response. Eighty-one (33.1%) consultants had never had any contact with the State Hospital. Seventy-two (29.4%) had been in contact in the last year; 22 (9%) between 1-2 years ago; 36 (14.7%) between 2-5 years ago and 34 (13.9%) more than 5 years ago.

Sixty (24.5%) were aware that they were the responsible catchment area consultant for at least one State Hospital patient (range 1-5). One hundred and forty-two (58%) had never referred a patient to the State Hospital. Of those who did make a referral admission resulted in 68 (67.3%) cases. The average time since last referral was just short of 3 years with a range of 1 month to almost 5 years. In the 12 months prior to the questionnaire 58 referrals were made and admission was refused in 14 cases. The commonest reasons for referral were physical violence (32.3%) and being a danger to the community (25.7%).

Fifty-five patients had been transferred to local consultant care in the past 12 months. Sixteen patients had been refused transfer for a variety of reasons including lack of local facilities in 5 cases. Satisfaction with the transfer process whenever experienced was expressed by 56 (22.9%) consultants, 22 (9%) thought it adequate and 10 (4.1%) unsatisfactory. For 157 (64.1%) this question was not applicable.

Access to a locked ward in the same hospital was available for 193 (78.8%) consultants, elsewhere for 43 (17.6%) and not at all for 9 (3.7%). Advice from a local forensic psychiatrist was available to 155 (63.3%) consultants.

Eighty-four (34.3%) thought that there were inadequate local resources in their area for rehabilitating State Hospital patients; 79 (32.2%) did not and 82 (33.5%) expressed no opinion. Thirty-nine (15.9%) thought that inadequate services in their

area was leading to referral of patients to the State Hospital; 121 (49.4%) did not and 85 (34.7%) expressed no opinion.

Discussion

This study represents an extensive survey of the population drawn from Scotland and Northern Ireland detained in conditions of maximum security psychiatric care. The population of the State Hospital has fallen from 340 in 1976 (State Hospital, 1992) to 203 by the end of the period of the initial research. Subsequently the population rose markedly to a high point of 261 in 1999. This issue is addressed in chapter VII.

Of note was the young patient average age of 34 years. This is considerably lower than the mean age of 60 years found in an in-patient study of 510 patients with a diagnosis of schizophrenia (Cunningham Owens and Johnstone, 1980) and 5 years younger than the average age of those detained in the Special Hospitals (Taylor et al, 1991).

The outstanding feature of the patient mix within the hospital was the dominance of the male sex. This differs markedly from the similar rates of in-patient admission of 558/100,000 population for men and 592/100,000 population for women to all Scottish psychiatric hospitals and units, although when broken down by diagnosis 92/100,000 males and 54/100,000 females were admitted with a schizophrenic psychosis (Scottish Health Statistics 1992). This strong imbalance within the State Hospital in favour of the male sex is more in keeping with the prison, rather than the hospital, population: In 1992 the average daily prison population in Scotland was 5,257, with 5,105 (97.1)% men and 158 (2.9%) women (Scottish Office, 1993).

The admission rate to the State Hospital per 100,000 health board area population showed that the two large population centres of Glasgow and Edinburgh catered for respectively by Greater Glasgow and Lothian Health Boards admit proportionately more patients than other areas. It was thought that this excess may reflect the known

social drift of people with schizophrenia towards cities (Goldberg and Morrison, 1963). An analysis of place of birth and current responsible health board found, however, that 89% of Greater Glasgow Health Board patients were born in the Glasgow area making social drift an unlikely explanation. One-third of Lothian Health Board patients were born outside its boundaries making this explanation more plausible for that area. Northern Ireland had a very low admission rate of 0.6/100,000 possibly reflecting its geographical distance from the State Hospital.

Diagnostic findings show that the majority of patients had a major mental illness, mainly schizophrenia. More than 10% had a learning disability but only 5% a primary diagnosis of antisocial personality disorder. Taylor et al (1991) found that in the Special Hospitals 26.2% of patients had a primary diagnosis of psychopathic disorder. This difference may be accounted for by differences in mental health legislation and psychiatric practice in Scotland from England and Wales. The level of agreement between the St. Louis criteria diagnoses and the RMO diagnoses was high. The undiagnosed psychiatric illness category allows for minimal symptoms, failure to meet the criteria where only one diagnosis is suspected, two confusing disorders, unclear chronology of important symptoms and lack of sufficient history. Most of the nine cases of undiagnosed psychiatric illness were due to failure to meet the six month duration criteria for schizophrenia but other causes included a case of DeClérambault syndrome and one of frontal lobe syndrome. One patient received no psychiatric diagnosis and had been admitted due to paedophilia. The large number of secondary diagnoses found in this population is important in terms of the rehabilitation of these patients.

Co-morbidity, in particular the existence of a major mental disorder and substance abuse, must be addressed. The casenote data suggest that almost half of the patients have a history of abusive alcohol consumption and a similar proportion of drug abuse on one or more occasions. Sixty patients (24.9%) received a Feighner criteria diagnosis of alcoholism and 56 (23.7%) of drug dependence, 25 had both. The literature clearly demonstrates the adjunctive effect of substance abuse in the presence of a mental disorder on violent behaviour (eg. Steadman et al, 1998) and

substance intoxication or withdrawal was noted to be a factor in events leading to admission in one-third of this study group. The casenote data regarding use of alcohol or illicit drugs was poor and formal assessment rare. Often mention was made of substance abuse in the initial assessment but this aspect was subsequently lost in following reports. This probably reflects the essentially abstinent environment of the State Hospital leading to a lack of therapeutic awareness of an important component of risk assessment.

The largest group was admitted from the courts. When compared with the 1991 figures the numbers admitted from court remained the same with a 7% increase in the number of transfers from prison and a similar decrease in the number admitted from other psychiatric hospitals. It may be that local hospitals are endeavouring to extend their intensive nursing capabilities and to keep patients who would previously have been sent to the State Hospital. In addition, psychiatric input to penal establishments may have improved and more patients with a major mental illness are therefore detected and referred. Concern has been expressed that with the move to community care in this decade, patients are increasingly becoming involved in the criminal justice system but it is widely recognised that this is a complex relationship (Conacher, 1996).

One hundred and eighteen (49%) patients were admitted directly on account of an offence. Clearly, some of those admitted from hospital could have been charged due to their behaviour with, for example, breach of the peace, but were not. Those admitted from prison, either convicted or on remand, had generally been accused or convicted of serious offences such as armed robbery or murder, and were felt to require security above the level provided by a local psychiatric hospital. In spite of the fact that approximately half were admitted because of an offence, just over 60% were detained under the Criminal Procedure (Scotland) Act 1975. This discrepancy can be explained by twenty patients transferred or recalled to the State Hospital as their behaviour had caused concern who were already detained under the C.P.(S.)A. 1975.

The survey patients had experienced many additional adversities to their mental illness or learning disability. The majority had endured significant distressing events during childhood. There were also high reported rates of physical illness for a relatively young population. The 17% with a history of epilepsy compares markedly with the 5% of the general population who have a fit of some sort during their lifetime (Pond et al, 1960). The intellectual abilities of those with a psychosis has been shown to deteriorate which is in keeping with the work of Frith et al (1991) for example.

About half the patients were experiencing positive symptoms of psychosis (morbid level >=2) and over a third achieved a maximum score on at least one positive symptom. Negative symptoms were less prominent. Reports of poor concentration, lassitude and depression were evident in over 30% of cases. Abnormalities of movement especially tremor, akathisia and bradykinesia were frequent. Parkinsonian symptoms were much commoner than spontaneous involuntary movements, in keeping with the relatively young average age of this population. There were notable differences between these patients and those from a follow-up study on schizophrenia (Johnstone et al, 1991) who were older and had a greater occurrence of spontaneous involuntary movements and a lower rate of Parkinsonian symptoms. (Inter-rater reliability scores of 0.76 on the TAKE and 0.98 on the AIMS were achieved by the rater from the State Hospital Survey and a rater from the schizophrenia follow-up study.) Examination of drug histories showed that fewer of the State Hospital patients received oral/depot medication (61.7%/47.4%) than the schizophrenia follow-up group (95.5%/78.2%) but for those who did, more of the State Hospital patients were on a large dose, that is greater than 800mg chlorpromazine equivalent per day, of oral/depot neuroleptic (32.9%/50.9%) than the comparable group (16.2%/41.9%).

The level of treatment resistant schizophrenia in high security hospitals is the subject of current research. In this the patient experiences ongoing positive and / or negative psychotic symptoms whilst being treated with neuroleptic mediation. It is generally considered to be higher in maximum security hospitals than the 5-20%

resistance level found in the total schizophrenic population (Brenner et al, 1990), and may arise from non-compliance, incorrect diagnosis, intolerable side-effects, excess or inadequate dosage, or treatment refractoriness. Treatment refractoriness has been defined as ongoing psychotic symptoms with substantial functional disability and/or behavioural deviance which persists in appropriately diagnosed persons with schizophrenia despite reasonable pharmacological and psychosocial treatment that have been provided continuously for an adequate time (1-2 years).

The Royal College of Psychiatrists consensus statement on high dose neuroleptic medication (Thompson, 1994) has had an effect on prescribing in the high security hospitals. Polypharmacy and high dose medication were common. There was little evidence that either was beneficial. The number of patients receiving high dose antipsychotic medication has fallen in the State Hospital from 35.1% in May 1995 to 9.8% in December 1998. Of the 21 patients who have stopped high dose antipsychotic medication 20 are receiving one atypical preparation and one a standard antipsychotic drug. Patients continuing to receive high dose neuroleptic medication did so because of failure to respond to lower doses, aggression and lack of cooperation, and temporarily whilst medication was being adjusted (Barber et al, 1998). Trends in antipsychotic drug prescribing have shown a 275 % increase in atypical antipsychotic medication and a 50% reduction in depot preparations since 1995 (Wright, M. and Beveridge, L., 1999 - Personal Communication). It will be important to ensure that compliance is maintained as patients are transferred to less secure settings. The reasons given for choosing an atypical antipsychotic preparation in a high security setting were refractory schizophrenia, intolerable side effects, reduction of side effects and marked negative symptoms. There is little evidence that these drugs improve the primary negative symptoms, anhedonia, alogia, flat affect and avolition, but their use may improve the secondary negative symptoms such as depression, sedation and extrapyramidal side-effects (King, 1998). Kane (1992) has shown that between 30-60% of patients with treatment refractory schizophrenia respond to clozapine usually within six months. There is some evidence (Rabinowitz et al, 1996; Buckley et al 1995) that clozapine may have an affect on aggression but Beck et al (1997) found no such effect for risperidone.

Over a third of the population had been prescribed antidepressants at some stage and a sixth were still receiving these. Secondary depression is common amongst this population and the use of antidepressants may be beneficial. Similar proportions had or were receiving anticonvulsant drugs. Seventeen percent had a history of epilepsy but some of these drugs may also be used as mood stabilisers. Carbamazepine is used as an adjunctive treatment in patients with aggressive or impulsive behaviour, or who have abnormal EEGs. It induces the metabolism of some antipsychotic drugs and an increase in their dose may be required. Lithium is used less commonly as an adjunct in the treatment of aggression but is useful in schizoaffective disorders. Benzodiazepines can provide sedation, enhance the effect of antipsychotic drugs and are useful in the treatment of neuroleptic induced akathisia. However, the risk of addiction and side-effects must be considered and under 5% of the population were prescribed these drugs on a regular basis. One-fifth of patients had received ECT. It is used in the treatment of mood disorders, if there is a strong affective component to a schizophrenic illness or in severe refractory states.

The finding that 53.3% of patients were said not to require the full security of the State Hospital is in keeping with the work of Taylor (1991). In her survey of need in the special hospitals 59% of patients were found not to require any element of maximum security.

The overall behaviour of the patients on the ward as noted by the nursing staff showed no dysfunction for between three-fifths and three-quarters of cases in terms of their self-care, underactivity, slowness or social withdrawal. This was significantly different for each behaviour ($p<0.01$) from a group of 32 patients with treatment resistant schizophrenia (Mercer et al, 1997) who showed greater morbidity. The State Hospital patients failed to show a significantly greater morbidity in any category although this approached statistical significance with respect to violent behaviour ($p=0.054$). These findings may be related to the severity of illness of the comparison group but also possibly to internal norms established by

the nursing staff. In a local psychiatric hospital more able patients may highlight the more marked difficulties of the treatment resistant group. There were vast differences between the two groups due to institutional features; for example ability to visit relatives or to possess scissors. There were significant differences between the two groups in terms of numbers of visitors and number of visits home in the last three months ($p<0.00001$). Over one-third of the State Hospital patients had received no visitors and 190 (83.3%) had not visited home during this period; whereas in the treatment resistant schizophrenia group 4 (12.5%) had no visitors and 4 (12.5%) had not visited home. This will be due in part to the geographical isolation of the State Hospital.

A good response rate was obtained for the Consultant Questionnaire. Almost 30% had had contact with the State Hospital in the previous year. Approximately 90 patients from the study were not apparently known to a local consultant, though some may be known to non-responders. Others may have been in the State Hospital for a considerable period and links with a local hospital broken. Others will have been admitted from prison directly and be previously unknown to local services. Not all patients referred were accepted for admission. Of those expressing an opinion a quarter thought that inadequate local facilities led to referral of patients to the State Hospital and over a half that local services were inadequate for rehabilitating State Hospital patients.

The multiple diagnoses, the young average age at first admission of 21 years, the mean duration of psychiatric in-patient care of 9 years, the relatively young current average age of 34 years, the medication history and ongoing treatment problems outlined by the RMO, emphasise the many difficulties inherent in caring for this group of patients. Those who did not require the full security arrangements of the State Hospital will continue to require psychiatric care elsewhere. Clearly the lack of suitable alternative facilities for the transfer of patients no longer requiring the security of the State Hospital is a major issue that must be addressed. These patients represent a very severely ill population whose disadvantages are compounded by adversities which have arisen from their earliest years. Their history of long-

standing psychiatric illness, disturbed behaviour and social isolation, with over a third receiving no visitors, suggest that they are likely to require substantial care in the future. It is important that such care should be provided to the best possible standard.

Chapter II - Women in the State Hospital

Women present more often with psychiatric morbidity than men (Bebbington et al, 1981) and are more frequently admitted to general psychiatric hospitals (Scottish Health Statistics, 1992) but far less often into conditions of special security (Maden et al, 1993; Brooks and Mitchell, 1975). Mentally disordered female offenders, alongside sexual offenders and patients with learning difficulties are identified as a "special group" within the Reed Report (Department of Health, 1992). In a strategy document, the Special Hospitals Service Authority (1995) stated that "the constellation of clinical characteristics of women patients appears clinically to be qualitatively different to those of men." It is therefore suggested that the balance of therapeutic input may need to be different from that of male patients but this requires further description". In the U.K., studies describing women in secure psychiatric care have predominantly been written from the perspective of mental health legislation applicable only to England and Wales (e.g. Bartlett, 1993; Bland et al, 1999); Smith, Parker and Donovan, 1991; Tennent *et al,* 1976). It is almost a quarter of a century since the last study to describe female patients in the State Hospital (Brooks and Mitchell, 1975) and with major changes occurring in psychiatric practice contemporary research was indicated.

Aims

1. To describe the female population of the State Hospital.
2. To compare female and male patient cohorts

Method

Information was collected as described in chapter I. Two hundred and three men and 24 women took part in a semi-structured clinical interview. One hundred and sixty-seven men and 16 women completed the NART, and 165 men and 16 women the QUICK test. Two hundred and eight male and 26 female drug prescription sheets

were available for examination. The responsible medical officer for 200 male and 25 female patients was interviewed, and the nurse keyworker for 201 men and 27 women. Data were analysed to compare male and female cohorts using the independent-t-test for continuous parametric variables or the Mann-Whitney U-test for non-parametric variables, and the chi-square test for categorical variables. Significant 2-tailed test results are reported unless otherwise stated as a 1-tailed test. N.S. is used to indicate a non-significant statistical test result. Levene's test for equality of variances was used with the independent t-test. Where findings were significant using all variable groups but more than 20% of cells had less than 5, groups were coalesced, for example into single or not.

Results

Description of the Female Population

There were 241 patients in the study and 28 (11.6%) were female. The women were on average 31.5 years old and the majority was single (23/82.1%).

Over two-thirds (19) of the women had a diagnosis of schizophrenia. Eleven (39.3%) had only 1 diagnosis with 8 and 6 having 2 and 3 diagnoses respectively. Three women had 4 diagnoses, characterised by a patient with schizophrenia, antisocial personality disorder, alcohol and drug abuse.

Seventeen (60.7%) women were admitted from other psychiatric hospitals, eight (28.6%) from court and 3 (10.7%) on remand from prison. Twelve (42.9%) were admitted on account of behavioural problems and 11 (39.3%) following an offence with a further 2 women admitted following transfer from an English Special Hospital. All 3 women admitted on remand from prison were each subsequently convicted of attempted poisoning, child abduction (x2) and wilful fire raising respectively. Of those admitted due to behavioural problems the majority of these were violent although other reasons included absconding, menace and deliberate self-harm. Thirteen (46.4%) patients were detained under civil and 15 (53.6%) under criminal legal provision.

The average number of hospital admissions was 8.6 (range 1-46) and the mean total time resident in hospital was 8 years 5 months (range 1 month-28 years). The average current length of stay in the State Hospital was 35.6 months (range 12 days - 20 years and 2 months). Ten (35.7%) patients had a previous admission to the State Hospital; 5 on 1 occasion, 4 on 3 and 1 patient 4 times.

Sixteen (57.1%) patients had been in mainstream schooling; 9 had been to a special school, 2 (7.2%) on account of learning difficulties and 7 (25%) due to behavioural problems; and 1 (3.6%) had been to a school for children with epilepsy. The educational details of 2 (7.2%) others were unrecorded.

Thirteen (46.4%) had a history of heavy or abusive use of alcohol and the same number had abused drugs on at least one occasion. Four (14.3%) had taken drugs intravenously.

Four (14.3%) patients had temporal lobe and 1 (3.6%) grand mal epilepsy. Ten (35.7%) had a chronic physical complaint, such as duodenal ulcer, insulin dependent diabetes mellitus and chronic constipation.

Eighteen (64.3%) women had a history of previous convictions. The average number was 15.8 (range 1-63). Almost 80% were for minor offences, such as theft or breach of the peace. Over a fifth were for violent non-sexual crime excluding homicide.

Responsible medical officers (RMOs) were asked whether their female patients required the degree of security currently provided by the State Hospital. Information was available on 25 of the 28 patients as 2 had been transferred prior to the RMO interview and 1 had died. Twenty-two (88%) were said not to need such a high level of security, 2 (8%) patients were said to require high security care and for 1 (3.6%) patient the security requirement was uncertain. In 14 (56%) the transfer or discharge process had been initiated. Lack of local facilities was the main reason given for the

discrepancy between adjudged readiness for transfer and failure to initiate the transfer process.

Comparison of Male and Female State Hospital Populations

The male:female ratio was 7.6:1. Men were older on average age by 3.5 years although this was not a statistically significant finding. All gender differences of statistical significance are summarised in table 1. The women had a greater history of psychiatric involvement but had spent a shorter time in the State Hospital.

Table 1 - Comparison of Male and Female State Hospital Populations

Factors of Note	Male (n=213)	Female (n=28)	Significance
Primary Diagnosis of Antisocial Personality Disorder	9 (4.2%)	4 (14.3%)	p=0.027
No. Admissions to Psychiatric Hospital	5 (1-30)	9 (1-46)	p=0.051
History of Self Harm	126 (59.2%)	22 (78.6%)	p<0.035 ^
History of Physical Abuse	31 (14.6%)	10 (35.7%)	p=0.013
History of Sexual Abuse	21 (9.9%)	14 (50.0%)	p<0.001
Restrictions on Discharge	117 (54.9%)	4 (14.3%)	p<0.001
History of Previous Convictions	181 (85.0%)	18 (64.3%)	p=0.014
Serious Offence leading to Admission	77 (36.2%)	2 (7.1%)	p=0.002
Source of Admission - Hospital	70 (32.9%)	17 (60.7%)	p=0.015
Previous State Hospital Admission	44 (20.7%)	11 (39.3%)	p=0.029^
Past Treatment with Lithium	44 (20.7%)	11 (39.3%)	p=0.029 ^
Past Treatment with ECT	43 (20.2%)	12 (42.9%)	p=0.014
PSE - Simple Depression	120 (56.3%)	21 (75.0%)	p=0.044 ^
PSE - Special Features of Depression	28 (13.1%)	11 (39.3%)	p=0.001
PSE - Sexual and Fantastic Delusions	90 (42.3%)	17 (60.7%)	p=0.050^
PSE – Olfactory Hallucinations	7 (3.3%)	5 (17.9%)	p=0.007
Diagnosis of Secondary Depression	18 (8.5%)	7 (25.0%)	p=0.007
Current Prescription - oral anti-psychotic	126 (60.6%)	21 (80.8%)	p=0.033
Current Prescription - hypnotic	5 (2.4%)	5 (19.2%)	p=0.002
Current Prescription - antidepressant	28 (13.5%)	8 (30.8%)	p=0.028
Krawiecka - Presence of Delusions	89 (43.8%)	17 (70.8%)	p=0.016
Current I.Q. - Quick Test mean	87.1	74	p=0.013
DAS - Lack of Leisure Interests in past week	42(20.7%)	11 (44.0%)	p=0.021
DAS - Violent Behaviour in past week	43(21.2%)	13(52.0%)	p=0.002
DAS - Unsuitable to do Work in Hospital	59 (29.4%)	18 (66.7%)	p<0.001
DAS - Unsuitable to Possess Matches	69 (34.3%)	15 (55.6%)	p=0.036
DAS - Unsuitable to go Out with Opposite Sex	60 (29.9%)	18 (66.7%)	p<0.001
DAS - Unsuitable to Handle Money	57 (28.4%)	18 (66.7%)	p<0.001
Do Not Require Security of State Hospital	98 (49.0%)	22 (88.0%)	p=0.001

PSE = Present State Examination Lifetime Checklist ^ 1-tailed
DAS = Disability Assessment Schedule

A comparison of primary diagnosis is shown in Table 2. No significant differences were found. Ten (35.7%) women and 69 (32.4%) men had a primary or secondary diagnosis of antisocial personality disorder (N.S.). Seven (25.0%) female patients had a diagnosis of secondary depression (men 8.5%, p=0.007) and 21 (75.0%) fulfilled the PSE category of simple depression compared to 56.3% in the male sample. Almost one-third of the women and 14 % of the men were being treated with an antidepressant. More women had required treatment with ECT or lithium in the past. More women were known to have been physically or sexually abused.

Table 2 - Primary Diagnosis by Sex

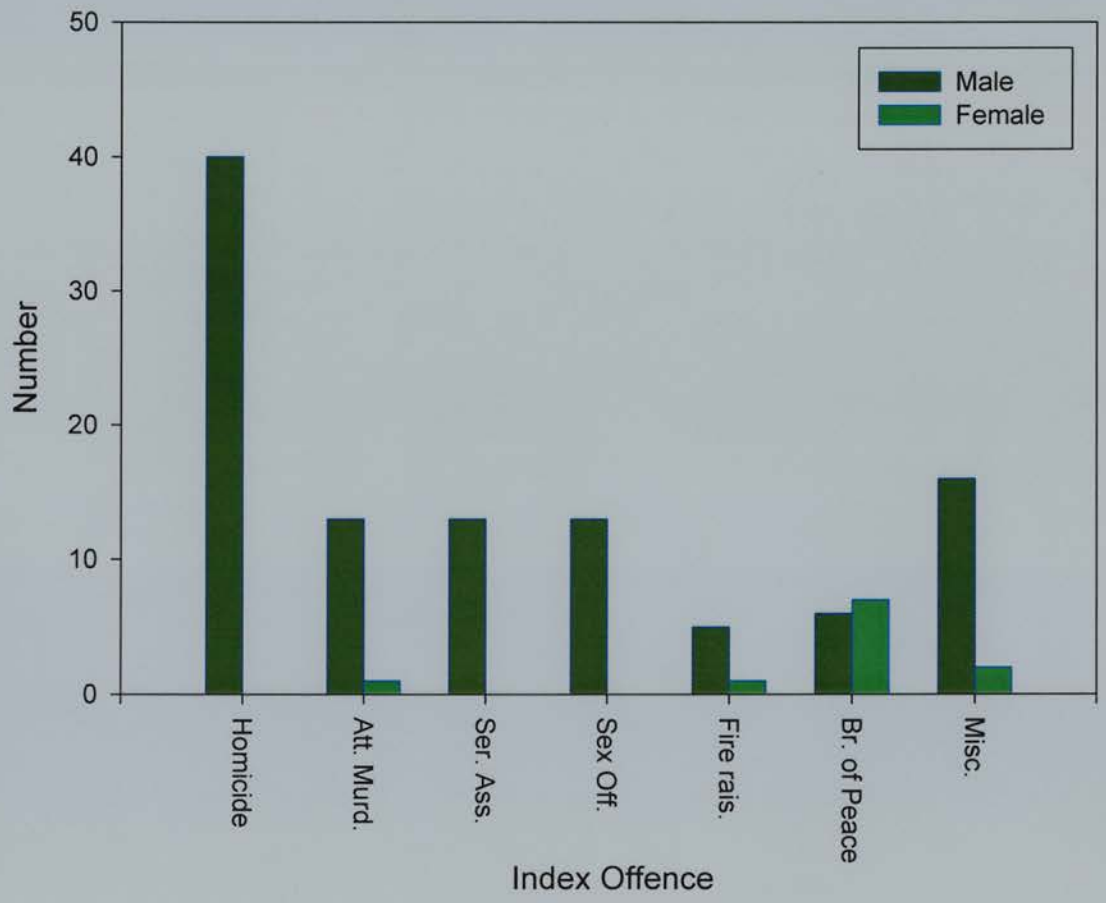
Diagnosis	**Male**	**Female**
Schizophrenia	150 (70.4%)	19 (67.9%)
Learning Disability	30 (14.1%)	2 (7.1%)
Antisocial Personality Disorder	9 (4.2%)	4 (14.3%)*
Alcohol Problem	5 (2.3%)	0
Organic Brain Syndrome	4 (1.9%)	0
Depression	4 (1.9%)	2 (7.1%)
Mania	2 (0.9%)	0
Undiagnosed Psychiatric Illness	8 (3.8%)	1 (3.6%)
No Diagnosis	1 (0.5%)	0

*p=0.027

While more women (80.8%) received oral antipsychotic medication than men (60.6%) (p=0.33 1-tailed), the average daily chlorpromazine equivalent dose was similar for the female (803mg {range 100-2,400mg}) and male (768mg {range 40-3,600mg}) populations. This was also the case for depot preparations with an average daily dose of about 1,000mg for both sexes. There were 73 (35.1%) men and 10 (38.5%) women receiving both oral and depot medication with an average daily chlorpromazine equivalent dose of greater than 2,000mg. Two (7.7%) women were prescribed clozapine compared to 20 (9.6%) men. More men (17.3%) were given anticonvulsant treatment compared to women (11.5%). None of the above findings were statistically significant unless stated. More women (19.2%) were prescribed lithium than men (8.2%) (NS) at a higher average dose of 1,530mg (men 1,079 mg) (p=0.012). More women (30.8%) also received an antidepressant than men (13.5%) (p=0.028). Almost one-fifth of women was prescribed hypnotic medication compared to 2.4% of men (p=0.002).

Fifty percent of men and 40% of women were admitted because of an offence. The nature of the offence leading to admission is shown in figure 1. The offences committed by men were more serious (p=0.002). More males had a history of previous convictions (p=0.014) with an average number of 14.1. Although fewer females had a history of offending, when this was present the average number of previous convictions tended to be slightly higher at 15.6 (N.S.). No women had committed a homicide or a sexual crime. Crimes of dishonesty were more common in men (50.2%/21.4%, p=0.004) as were minor offences such as breach of the peace, motor offences and petty assault (52.7%/35.7%, p=0.028).

Figure 1 - Index Offence by Sex



Att. Murder - Attempted murder
Ser. Ass. - Serious assault
Sex Off. - Sex offence
Fire rais. - Fire raising
Br. of Peace - Breach of the Peace
Misc. - Miscellaneous

Patient Interview

Table 3 - Results of the individual items of the Krawiecka scale

Item	%0 male/female	%1 male/female	%2 male/female	%3 male/female	%4 male/female
Depression	60.6/45.8	8.9/20.8	26.1/29.2	4.4/4.2	-
Anxiety	73.4/62.5	5.9/20.8	15.8/16.7	4.9/0	-
Incongruity of affect	89.2/79.2	-	7.9/8.3	3.0/8.3	0/42
Flattening of affect	63.5/50.0	-	17.7/16.7	14.3/25.0	4.4/8.3
Retardation	92.1/95.8	-	3.9/4.2	3.0/0	1.0/0
Hallucinations	75.9/54.2	2.0/0	1.5/0	3.4/8.3	17.2/37.5
Delusions*	56.2/29.2	-	3.0/0	8.9/8.3	32.0/62.5
Incoherence of speech	87.2/70.8	-	6.4/8.3	5.9/16.7	0.5/4.2
Poverty of speech/muteness	95.1/100	1.0/0	2.5/0	0.5/0	1.0/0

*p=0.016

Table 4 - Results of the individual items of the Montgomery-Asberg scale

Item	%0 M/F	%1 M/F	%2 M/F	%3 M/F	%4 M/F	%5 M/F	%6 M/F
Apparent sadness	89.7/83.3	1.5/4.2	5.4/4.2	2.5/8.3	1.0/0	-	-
Reported sadness	63.5/45.8	7.4/16.7	20.7/20.8	4.4/16.7	3.4/0	0.5/0	-
Inner tension	74.9/62.5	4.4/4.2	11.8/16.7	7.4/16.7	1.5/0	-	-
Reduced sleep	89.2/91.7	0.5/0	4.4/4.2	2.5/0	2.0/0	1.0/4.2	0.5/0
Reduced appetite	93.6/100	2.0/0	2.0/0	2.0/0	0.5/0	-	-
Concentration difficult	53.7/33.3	1.5/0	19.2/20.8	15.8/20.8	9.4/20.8	0.5/4.2	-
Lassitude	54.7/62.5	3.0/4.2	25.6/25.0	9.4/8.3	6.9/0	0.5/0	-
Inability to feel	91.6/95.8	0.5/0	5.4/4.2	1.0/0	1.5/0	-	-
Pessimistic thoughts	83.7/70.8	2.5/0	10.8/20.8	2.0/8.3	1.0/0	-	-
Suicidal thoughts	81.3/62.5	1.0/0	11.8/16.7	3.0/12.5	3.0/8.3	-	-

No significant differences found.

Table 5 - Results of individual AIMS items

Item	%0 M/F	%1 M/F	%2 M/F	%3 M/F	%4 M/F
Muscles of facial expression	99.5/95.8	-	0/4.2	0.5/0	-
Lips and perioral area	100/95.8	-	-	0/4.2	-
Jaw	91.6/87.5	1.0/4.2	4.9/4.2	2.5/4.2	-
Tongue	83.7/75.0	3.9/8.3	3.4/4.2	3.9/12.5	4.9/0
Upperlimbs	90.6/87.5	-	2.5/4.2	6.9/8.3	-
Lower limbs	98.0/100	-	1.0/0	1.0/0	-
Neck, shoulders, hips	98.5/100	-	1.0/0	0.5/0	-
Severity of abnormal movement	72.9/75.0	5.9/4.2	12.8/8.3	7.9/12.5	0.5/0
Incapacity by abnormal movement	79.3/79.2	12.3/8.3	7.4/12.5	1.0/0	-
Awareness of abnormal movement	92.6/95.8	5.4/4.2	2.0/0	-	-

No significant differences found.

Table 6 - Results of individual TAKE items

	%0 M/F	%1 M/F	%2 M/F	%3 M/F	%4 M/F
Bradykinesia	56.7/37.5	2.5/4.2	19.7./25.0	21.2/33.3	-
Rigidity	80.3/83.3	1.5/4.2	10.8/0	7.4/12.5	-
Tremor	37.4/20.8	2.5/4.2	29.6/29.2	27.6/41.7	3.0/4.2
Autonomic side-effects	70.4/58.3	2.5/8.3	20.2/25.0	6.9/4.2	0/4.2
Akathisia	52.7/45.8	2.0/8.3	28.6/33.3	16.3/12.5	0.5/0
Overall severity of side effects	18.8/8.3	21.3/8.3	42.1/62.5	17.8/20.8	-
Incapacitation by side-effects	41.9/20.8	41.4/58.3	14.3/16.7	2.5/4.2	-
Awareness of side-effects	57.6/58.3	35.0/33.3	6.9/8.3	0.5/0	-

No significant differences found.

Psychology Interview

The mean pre-morbid I.Q. (NART) was 91.3 for the male and 85.1 for the female cohort (N.S.). The current I.Q. (Quick Test) was 87.1 and 74 respectively (p=0.013).

Discussion

Women in maximum security psychiatric care in Scotland appeared to be a different group from their male counterparts. Women constituted only a tenth of the population in the State Hospital which is broadly similar to the proportion in Broadmoor, Ashworth and Rampton Special Hospitals in England (Bland et al, 1999). There is evidence of decreasing numbers of women within the State Hospital and the English Special Hospitals over the past decade (Bland et al, 1999; Thomson, Doyle et al, 1999; Maden et al, 1993; Taylor et al, 1991). In terms of its gender composition the State Hospital falls between the prison, 2.9% female (Scottish Office, 1993), and hospital, 53.2% female (Scottish Health Statistics, 1992), populations. This is a predictable finding given the nature and purpose of the institution.

The female average age of 31.5 years has remained stable. Mitchell and Murphy (1975) found an average age of 31.4 years in 1973. There is general agreement in the literature that women in the Special Hospitals are younger than their male counterparts (Bland et al, 1999). This finding was borne out by the present study although mean age difference comparisons were distorted by the presence of several

male patients in the comparison group over 60 years of age and were not statistically significant.

Schizophrenia was the commonest primary diagnosis for both the male and female populations. This was confirmed by the Present State Examination. The diagnostic groupings were very different from those assigned to women in the State Hospital from 1959-1973 (Brooks and Mitchell, 1975). During that period 66 women were admitted: 27 (40.9%) with a diagnosis of personality disorder, 19 (28.8%) of mental sub normality, 13 (19.7%) of schizophrenia, 3 (4.5%) of affective psychosis, 1 (1.5%) of organic psychosis and 3 (4.5%) of neurotic illness. These differences may partly be accounted for by changes in Scottish psychiatric practice whereby patients with a primary diagnosis of personality disorder are more likely to be dealt with by the penal system. About one third of women in the English special hospitals have a primary diagnosis of personality disorder (Taylor, 1989 and Grounds, 1991), compared with less than a sixth of the State Hospital female population.

About a third of both male and female patients in the State Hospital had a diagnosis of an antisocial personality disorder, but significantly more women than men had this as a primary diagnosis although numbers were small. Multiple diagnoses were common with alcohol and drug abuse frequently implicated in the behaviour or offence leading to admission. Thomas and McMurran (1993) in a study of special hospital patients found that alcohol abusers had more previous convictions and committed more serious offences, such as murder or manslaughter, than non-abusers.

Forty-three percent of women and 22.5% of men were unable or unwilling to take part in psychological testing. Given this disparity between the gender cohorts it is difficult to meaningfully interpret the finding of a significantly lower current intelligence in the female group.

Significantly more women than men were admitted from other psychiatric hospitals on the grounds of difficult behaviour and only one women had a serious offence as

her direct reason for admission although the 3 women transferred from prison while on remand had been charged with serious offences. Some of those admitted on account of behavioural problems could have been charged with, for example, breach of the peace. More men were subject to restrictions on discharge. Significantly more men had a history of previous convictions in keeping with societal norms, although offending behaviour was common in both groups. Tennent et al (1976) found 61.8% of women in the special hospitals had a criminal record. A history of social disadvantage, as was common with these patients, is associated with offending behaviour (Chiswick and Cope, 1995; Shepherd and Farrington, 1995).

Fewer women came from the criminal justice system and fewer had a history of offending than found by Bartlett in her study of Special Hospitals (1993). Over recent years there has been a slight but statistically insignificant change in the source of admission with more women admitted from other psychiatric hospitals (57.1% v. 53%) and prison (10.7% v. 7.8%), and a corresponding decrease in the numbers from court (32.1% v. 37.9%) (Brooks and Mitchell, 1975). Although only 9 women in the present study were admitted from court, 15 were held under the Criminal Procedure (Scotland) Act 1975 as they were subject to its provisions prior to transfer to the State Hospital. Only 4 women were subject to a restriction order and 3 of these were prison transfers.

The duration of the average female admission was almost 2 years shorter than her male counterpart although this did not reach statistical significance. Of note in the female population were the number of psychiatric admissions and the frequent incidents of self-harm. Women were more likely to have experienced depressive symptoms and consequently, more had been treated with ECT and lithium and more were receiving antidepressants.

Many patients reported poor childhood experiences including parental misuse of alcohol but it was a history of physical and sexual abuse that was significantly greater in the female population.

Significantly more women (88%) were said not to require the full security of the State Hospital than men (49%). This was true for all but 3 of the women but for only 14 had the transfer or discharge process been initiated. Lack of suitable local facilities was identified as a major problem and had contributed to a prolonged stay in the State Hospital in addition to being a common reason cited for re-admission. The patients' histories of long-standing psychiatric illness and disturbed behaviour suggested that they were likely to require substantial care in the future. It is important that such care should be provided to the best possible standard and in the most appropriate setting. Clearly the identified lack of suitable alternative facilities for the transfer of patients no longer requiring the security of the State Hospital is an issue that must be addressed for both male and female patients.

Stevenson (1991) argued that behaviour accepted in men and resulting in a prison sentence can lead to a diagnosis of personality disorder and admission to a special hospital for a woman. Certainly there were more women with a primary diagnosis of personality disorder in the State Hospital, although numbers were small. All women with this diagnosis came via court or prison and women admitted via the penal system committed more minor offences than men. Maden et al (1994) found that levels of psychiatric morbidity in female sentenced prisoners were higher than in their male counterparts, with the exception of psychosis which was equally prevalent at 2%, and Grounds (1991) showed that proportionately more women were transferred from prison to a special hospital. It is unclear whether the system is discriminating against men or women. It may depend on whether admission to a maximum security hospital is viewed as an advantage or a disadvantage. Interestingly a review of offenders in the USA found that women were less likely to be referred for a psychiatric opinion (Herjanic et al, 1977). In the State Hospital over half the women were not admitted however via the penal system but came from local psychiatric hospitals on account of aggressive behaviour.

The gender comparison shows that the women in the State Hospital were more delusional than men and displayed more violent behaviour. More were prescribed antipsychotic medication. As far back as 1966 (McKerracher et al) in a study

comparing male and female subnormal offenders, it was noted that women were admitted for less serious offences than men. They were also admitted for difficult behaviour, such as attacks on staff in other hospitals or self harm, and that their aggression often continued even after admission.

Stevenson (1991) argued that women in special hospitals are treated differently from men and are more controlled and restricted. Evidence for this was found in some of the results of the nursing keyworker interview. More women were deemed unsuitable to do a number of tasks including working within the hospital, possessing matches, mixing with the opposite sex and handling money. These results may be explained however, by the number of women exhibiting violent behaviour and / or psychotic symptoms rather than by a more restrictive regime. Larkin et al (1988), in a study of violent incidents in Rampton Special Hospital, found that although female patients represented only a quarter of the total hospital population, they were responsible for three-quarters of the incidents. In spite of their disturbed behaviour and apparent resistance to treatment these women were generally deemed not to represent a major danger to the public. The evidence from this study suggests that it is the clinical characteristics of these women that result in greater restriction within this setting rather that their gender.

Women in maximum security psychiatric care in Scotland are a very disadvantaged group. At an average age of 31 years, due to mental illness or mental impairment, mainly schizophrenia, they have spent almost 9 years of their lives in hospital. Half have been sexually abused and three-quarters have tried to harm themselves. Undoubtedly these women were difficult to treat and care for. They have spent a similar period in hospital and received just as extensive medication as the men but were still more likely to have active delusions on interview and to carry out aggressive acts against themselves or others.

Yet however difficult their behaviour was or resistant to treatment these women were, it is difficult to say that they represented a major danger to the public. The need for the majority was not for maximum security psychiatric care, as shown by

RMO security assessments, lack of restriction orders and lesser criminological histories, but rather for intensive psychiatric care.

Chapter III - Schizophrenia

The diagnosis and treatment of schizophrenia is the core business of the State Hospital. The majority of patients have schizophrenia and therefore this group has been studied separately.

Aim

1. To describe the population in the State Hospital with schizophrenia.

Method

All patients fulfilling a St. Louis criteria diagnosis of schizophrenia (Feighner, 1972) were included. The collection of the data studied is described in Chapter 1. To highlight some of the features of the schizophrenic cohort it was compared to the rest of the State Hospital population referred to as the "other cohort". In chapter one, table 4 records primary diagnosis and describes the composition of the other cohort. All variables were compared statistically and where significant differences were found these are recorded in the results section. Data were analysed to compare schizophrenic and other cohorts using the independent-t-test for continuous parametric variables or the Mann-Whitney U-test for non-parametric variables, and the chi-square test for categorical variables. Significant 2-tailed test results are reported unless otherwise stated as a 1-tailed test. Levene's test for equality of variances was used with the independent t-test. Where findings were significant using all variable groups but more than 20% of cells had less than 5, groups were coalesced, for example into single or not. N.S. is used to indicate a non-significant statistical result.

Results

One hundred and sixty-nine (70.1%) patients had a primary diagnosis of schizophrenia. Evidence supporting this diagnosis was found using the Present State Examination Syndrome Checklist (Wing et al, 1974); nuclear syndrome 137 (81.1%) [other 11.1%, p<0.001], incoherent speech 70 (41.4%) [other 6.9%, p<0.001], residual syndrome 105 (62.1%) [other 20.8%, p<0.001], affective flattening 101 (59.8%) [other 9.7%, p<0.001], auditory hallucinations 146 (86.4%) [other 27.8%, p<0.001], delusions of persecution 147 (87%) [other 19.4%, p<0.001], delusions of reference 67 (39.6%) [other 4.2%, p<0.001], grandiose and religious delusions 75 (44.4%) [other 8.3%, p<0.001], sexual and fantastic delusions 92 (54.5%) [other 9.7%, p<0.001], visual hallucinations 66 (39.1%) [other 12.5%, p<0.001], and non-specific psychosis 85 (50.3%) [other 11.1%, p<0.001]. Co-morbidity was common and this is displayed in table 1. Approximately a third of both cohorts had an additional diagnosis of antisocial personality disorder. Lifetime symptoms of simple depression were greater in the schizophrenic cohort 107 (63.3%) [other 47.2%, p=0.023], as was slowness 58 (34.3%) [other 15.3%, p=0.002], agitation 82 (48.5%) [other 27.8%, p=0.002], self-neglect 65 (38.5%) [other 22.2%, p=0.046], ideas of reference 19 (11.2%) [other 0], irritability 152 (89.9%) [other 80.6%, p=0.040 1-tailed], loss of interest and concentration 121 (71.6%) [other 47.2%, p=0.001] and hypochondriasis 18 (10.7%) [other 4.2%, p=0.042].

Table 1 - Patients with Schizophrenia and Co-morbidity

Diagnoses	n (%)
Schizophrenia alone	60 (35.5)
+ Personality disorder	25 (14.8)
+ Learning disability	4 (2.4)
+ Substance misuse	36 (21.3)
+ Personality disorder with substance misuse	24 (14.2)
+Other	20 (11.8)*
Total with schizophrenia	

* Schizophrenia + secondary depression (n=7); schizophrenia + organic brain syndrome + secondary depression (n=1); schizophrenia + organic brain disorder + substance misuse (n=2); schizophrenia + secondary depression + substance misuse (2); schizophrenia + antisocial personality disorder + secondary depression (n=2); schizophrenia + antisocial personality disorder + secondary depression + substance misuse (n=6).

The average age of the schizophrenic group was 35.7 years (range 19-63) compared to 32.1 years (range 17-67) in the other group (p=0.018). There were 150 (88.8%) men and 19 (11.2%) women with schizophrenia and the proportions were similar in the other cohort. The majority of the schizophrenic cohort was single and had never married (85.2%/other 77.8%, N.S.). Ninety-one (53.8%) of these schizophrenic patients were from socio-economic groups III manual to V (other 50.0%, N.S.). For 30.8% there was no information about father in order to assign a socio-economic group (other 37.5%, N.S.). All schizophrenic patients were detained under the provisions of the Mental Health (Scotland) Act 1984 (44.4%) or the Criminal Procedure (Scotland) Act 1975 (55.6%). One quarter were detained under civil proceedings (section 18 MH(S)A 1984) compared to 14% of the other cohort (N.S.).

One-fifth of the other cohort had no history of psychiatric treatment but this was the case for less than 4% of the schizophrenic group (p<0.001). Schizophrenic patients had on average 6 previous admissions to psychiatric hospital (range 1 to 46) and had spent on average 9 years five months there (range 1 month – 36 years 5 months, median 65 months). The other cohort had only 3 previous admissions (p<0.001) lasting a mean of 9 years (range 1 month - 45 years, median 47 months). One tenth of the schizophrenic cohort had been refused State Hospital admission in the past compared to a sixth of the other group but this was not a significant finding. A quarter of the schizophrenic group had a previous State Hospital admission (other 16.7%, N.S.). Almost two-thirds of both groups had a history of deliberate self-harm. All but one schizophrenic patient had been treated with oral antipsychotic medication in the past and almost 90% with depot medication compared to 65% (p<0.001) and 30% (p<0.001) of the other group respectively. Forty-five (26.6%) of the schizophrenic cohort had been prescribed lithium (other 13.9%, p=0.043), 66 (39.1%) an anti depressant (other 29.2%, N.S.), 61 (36%) a benzodiazepine (other 26.4%, N.S.), 130 (76.9%) an anti-cholinergic drug (other 26.4%, p<0.001)), 12 (7.1%) an anti-libidinal preparation (other 12.5%, N.S.) and 49 (29%) ECT (other 8.3%, P<0.001). Forty-four (26%) had taken anti-convulsant medication (other 34.7%, N.S.), either as a mood stabiliser or for epilepsy.

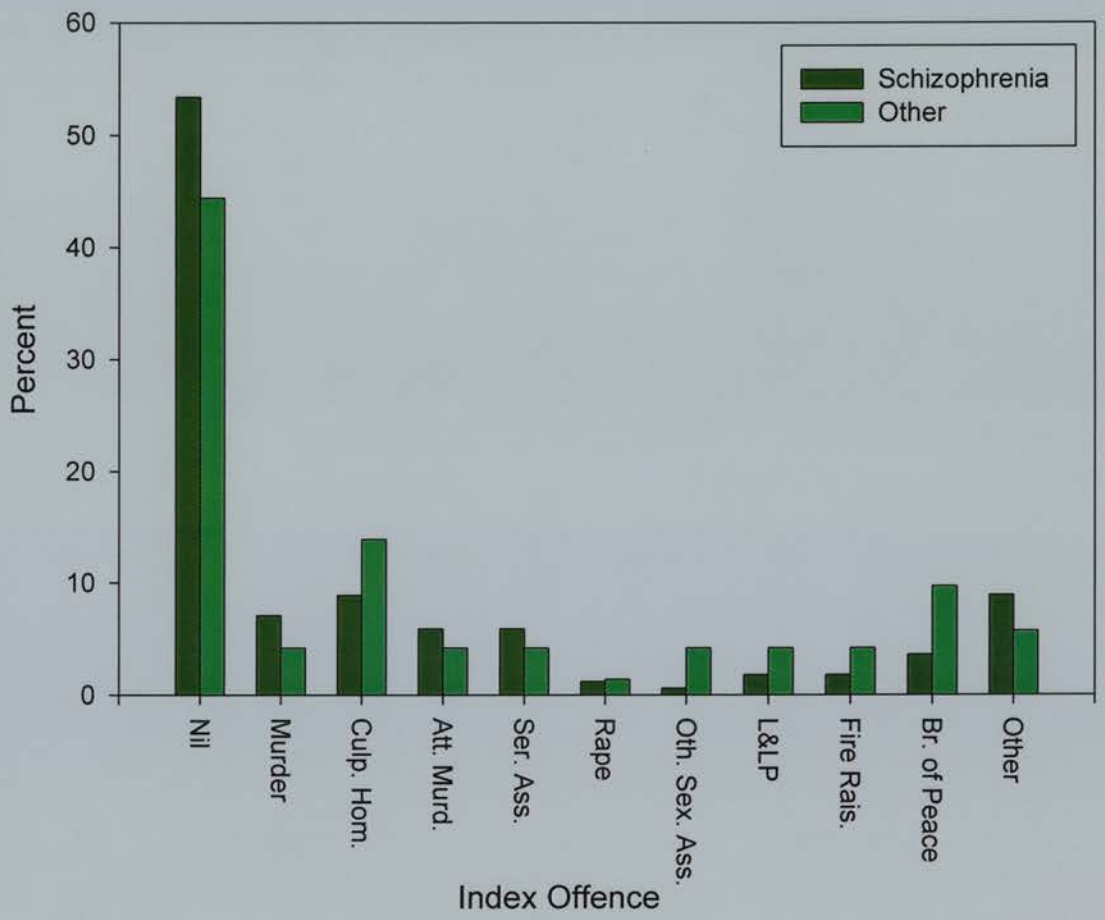
Three percent of mothers and 0.6% of fathers of schizophrenic children had a known history of schizophrenia and almost a tenth of their mothers and a quarter of their fathers had a history of alcohol or drug abuse. Only two fathers and no mothers in the other cohort had a history of schizophrenia but substance abuse was slightly more common (13% mothers and 27.8% fathers, N.S.). Twenty-two (13%) schizophrenic patients had a noted birth problem and 26 (15.4%) had developed abnormally. These figures were less than the quarter ($p=0.001$) and third ($p<0.001$) found respectively in the other cohort. One hundred and eighteen (69.8%) schizophrenic patients had experienced a significant childhood event as had 58 (80.6%, N.S.) of the other cohort.

Thirty-one (18.3%) patients with schizophrenia had attended an approved school (other 26.4%) and 10 (5.9%) went to a school for children with learning difficulties (other 41.7%). A significant difference was found between the schizophrenic and other cohorts, more of the latter attended some form of special educational facility ($p<0.001$). Twenty-five (14.8%) had been physically abused (other 22.2%, N.S.) and 18 (10.7%) sexually abused (other 23.6%, $p=0.015$). Ninety-one (53.8%) schizophrenic patients had a history of heavy or abusive use of alcohol (other 36.1%, $p=0.016$), 90 (53.3%) had abused drugs (other 31.9%, $p=0.003$) and 18 (10.7%) had been intravenous drug abusers (other 6.9%, N.S.). Seventy (41.4%) patients with schizophrenia had a chronic physical disorder (other 52.8%, $p=0.010$) and 23 (13.6%) a history of epilepsy (other 26.4%, $p=0.025$). One hundred and forty-one (83.4%) schizophrenic patients had a history of previous convictions with an average number of 12 (range 1-65) (other 80.6%, N.S.). In the offending history (excludes index offence) of the schizophrenic cohort almost 10% had committed a homicide (other 5.6%, N.S.), 40.2% another serious violent offence (other 31.9%, N.S.), 13.6% sexual crimes (other 15.3%, N.S.), 47.3% crimes of dishonesty (other 45.8%, N.S.), 15.4% another crime such as fire raising or drug offences (other 22.2%, N.S.), and 57.4% offences such as breach of the peace, motor offences or petty assault (other 50.0%, N.S.).

Sixty-nine (40.8%) people with schizophrenia were admitted from court (other 51.4%), 33 (19.5%) from prison (other 20.8%), and 67 (39.6%) from other psychiatric hospitals (other 27.9%) (N.S.). Seventy-seven (45.6%) were admitted on account of an offence (other 55.6%), 63 (37.3%) because of behavioural problems (other 23.6%) and 29 (17.2%) for other reasons, mainly transfer from prison (other 20.8%) (N.S.). Physical violence as a reason for admission was present in 71.4% of the schizophrenic cohort without an index offence and in 35.9% of the other cohort ($p=0.044$). Index offences when they occurred tended to be serious (see figure 1) but this did not significantly differ from the other cohort.

One hundred and sixteen (68.6%) patients with schizophrenia were actively psychotic at the time of the index event leading to admission (other 22.2%, $p<0.001$)). Twenty-nine (17.2%) were under the influence of alcohol (other 13.9%, N.S.) and 6 (3.6%) of drugs (other 8.3%, N.S.). Twenty-seven (16%) were experiencing drug or alcohol withdrawal at the time (other 8.3%, N.S.). Twenty-four (14.2%) had failed to take prescribed medication (other 4.2%, $p=0.016$).

Figure 1 - Offence leading to admission



Culp. Hom. - Culpable Homicide
Att. Murder - Attempted murder
Ser. Ass. - Serious assault
Oth. Sex Ass. - Other Sexual Assault
L&LP - Lewd and Libidinous Practices
Fire rais. - Fire raising
Br. of Peace - Breach of the Peace

Prescribed Medication

The prescription sheet of 165 schizophrenic patients and 69 others was recorded. Seventy-two percent of patients with schizophrenia received an oral neuroleptic at an average daily dose of 843mg (range 40-3,600mg) compared to 40.6% ($p<0.001$) of other patients (average daily dose 490mg / range 50-2,200mg, $p=0.005$). Almost two-thirds of schizophrenic patients received a depot preparation compared to only 13.0% of other patients ($p<0.001$). The average dose was 1,000 mg (range 125-5,000 mg) compared to 661 mg (250-1,500 mg) in the other patients (N.S.). For those receiving both oral and depot preparation the average dose was 2,076 mg (range 388-6,300 mg) in the schizophrenic cohort and 1,634mg (range 900-3,400mg) in the other cohort (N.S.). Almost two-thirds of the schizophrenic cohort were prescribed regular or as required anti-Parkinsonian medication compared to only one-quarter of the other cohort ($p<0.001$). Thirteen percent of the schizophrenic cohort received clozapine with an average dose of 512mg (range 250-900 mg). None of the other cohort received clozapine. Ten percent of the schizophrenic group and 7% of the other group received lithium (N.S.). Fifteen percent of both groups were given an antidepressant (N.S.). Fifteen percent of the schizophrenic group and 20% of the other group received an anti-convulsant (N.S.).

Patient Interview

One hundred and sixty patients with schizophrenia were interviewed and 67 others.

Table 2 - Results of the individual items of the Krawiecka scale

Item	%0 Schizo-phrenia/ Other	%1 Schizo-phrenia/ Other	%2 Schizo-phrenia/ Other	%3 Schizo-phrenia/ Other	%4 Schizo-phrenia/ Other
Depression	59.4/58.2	7.5/16.4	28.1/22.4	5.0/3.0	-
Anxiety	70.6/76.1	8.1/6.0	15.6/16.4	5.6/1.5	-
Incongruity of affect	86.3/92.5	-	8.8/6.0	4.4/1.5	0.6/0
Flattening of affect***	54.4/80.6	-	21.3/9.0	18.1/9.0	6.3/1.5
Retardation	90.0/98.5	-	5.0/1.5	3.8/0	1.3/0
Hallucinations****	66.9/89.6	1.9/1.5	1.3/1.5	5.0/1.5	25.0/6.0
Delusions****	43.8/76.1	-	1.3/6.0	10.6/4.5	44.4/13.4
Incoherence of speech	81.9/94.0	-	7.5/4.5	9.4/1.5	1.3/0
Poverty of Speech/Muteness	96.3/94.0	-	1.9/3.0	0.6/0	1.3/0

*$p<0.05$, **$p<0.01$, ***$p<0.005$, ****$p<0.001$

Table 3 - Results of the individual items of the Montgomery-Asberg scale

Item	%0 Schizo-phrenia/ Other	%1 Schizo-phrenia/ Other	%2 Schizo-phrenia/ Other	%3 Schizo-phrenia/ Other	%4 Schizo-phrenia/ Other	%5 Schizo-phrenia/ Other	%6 Schizo-phrenia/ Other
Apparent sadness	87.5/92.5	1.3/3.0	5.6/4.5	4.4/0	1.3/0	-	-
Reported sadness	61.9/61.2	6.3/13.4	21.3/19.4	6.3/4.5	3.8/1.5	0.6/0	-
Inner tension	71.9/77.6	3.8/6.0	12.5/11.9	10.0/4.5	1.9/0	-	-
Reduced sleep	90.6/86.6	0.6/0	2.5/9.0	1.9/3.0	2.5/0	1.9/0	-
Reduced appetite	95.6/91.0	1.3/3.0	1.3/3.0	1.3/3.0	0.6/0	-	-
Concentration difficult	51.9/50.7	0.6/3.0	19.4/19.4	14.4/20.9	13.1/4.5	0.6/1.5	-
Lassitude	52.5/62.7	2.5/4.5	27.5/20.9	11.3/4.5	5.6/7.5	0.6/0	-
Inability to feel	91.9/92.5	0.6/0	5.0/6.0	1.3/0	1.4/1.5	-	-
Pessimistic thoughts	81.9/83.6	1.9/3.0	12.5/10.4	3.1/1.5	0.6/1.5	-	-
Suicidal thoughts	80.6/76.1	0.6/1.5	11.9/13.4	3.8/4.5	3.1/4.5	-	-

No significant differences found.

Table 4 - Results of individual AIMS items

Item	%0 Schizo-phrenia/ Other	%1 Schizo-phrenia/ Other	%2 Schizo-phrenia/ Other	%3 Schizo-phrenia/ Other	%4 Schizo-phrenia/ Other
Muscles of facial expression	100/97.0	-	0/1.5	0/1.5	-
Lips and perioral area	100/98.5	-	-	0/1.5	-
Jaw	90.6/92.5	1.3/1.5	6.3/1.5	1.9/4.5	-
Tongue	80.0/89.6	5.0/3.0	4.4/1.5	5.6/3.0	5.0/3.0
Upper limbs	88.8/94.0	-	3.1/1.5	8.1/4.5	-
Lower limbs**	100/94.0	-	0/3.0	0/3.0	-
Neck, shoulders, hips	98.8/98.5	-	0.6/1.5	0.6/0	-
Severity of abnormal movement	70.0/80.6	7.5/1.5	14.4/7.5	8.1/9.0	0/1.5
Incapacity by abnormal movement	78.1/82.1	13.8/7.5	8.1/7.5	0/3.0	-
Awareness of abnormal movement	93.1/92.5	4.4/7.5	2.5/0	-	-

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 5 - Results of individual TAKE items

Item	%0 Schizo-phrenia/ Other	%1 Schizo-phrenia/ Other	%2 Schizo-phrenia/ Other	%3 Schizo-phrenia/ Other	%4 Schizo-phrenia/ Other
Bradykinesia*	50.0/65.7	1.9/4.5	21.3/17.9	26.9/11.9	-
Rigidity	78.1/86.6	2.5/0	10.6/7.5	8.8/6.0	-
Tremor**	29.4/50.7	3.1/1.5	31.9/23.9	31.9/22.4	3.8/1.5
Autonomic side-effects***	62.5/85.1	3.8/1.5	23.8/13.4	9.4/0	0.6/0
Akathisia**	44.4/70.1	3.8/0	33.8/17.9	17.5/11.9	0.6/0
Overall severity of side-effects****	8.1/40.9	21.3/16.7	50.0/30.3	20.6/12.1	-
Incapacitation by side-effects	31.9/58.2	48.1/31.3	16.9/9.0	3.1/1.5	-
Awareness of side-effects	51.9/71.6	38.8/25.4	8.8/3.0	0.6/0	-

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Psychology Interview

Psychological testing was completed on 117 of the schizophrenic cohort and 35 others. The pre-morbid I.Q. (NART) for the schizophrenic cohort was 97.7 and 92.6 for the other cohort excluding learning disability (N.S.). Current I.Q. (Quick Test) was an average of 90 and 90.2 respectively (N.S.).

Nursing Interview

The keyworker of 160 schizophrenic patients and 68 others was interviewed. Table 6 contains unknown data for 43 patients, 18.8% from the schizophrenic and 19.1% from the other cohort.

Table 6 - Nurses' observation of in-patients' behaviour in the ward over past month (nurses' section of the Disability Assessment Schedule)

	No Dysfunction Schizo-phrenia/ Other	Minimum dysfunction Schizo-phrenia/ Other	Obvious dysfunction Schizo-phrenia/ Other	Serious dysfunction Schizo-phrenia/ Other	Very serious dysfunction Schizo-phrenia/ Other	Maximum dysfunction Schizo-phrenia/ Other
Self-care****	39.4/69.1	18.1/7.4	13.1/2.9	6.9/0	1.3/1.5	2.5/0
Underactivity****	38.8/72.1	15.6/4.4	12.5/2.9	8.1/1.5	4.4/0	1.9/0
Slowness*^	67.7/90.9	11.5/5.5	16.2/3.6	1.5/0	0.8/0	2.3/0
Social withdrawal***	52.3/83.6	23.1/9.1	11.5/3.6	5.4/3.6	4.6/0	3.1/0

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001, ^ 1-tailed

Table 7 - Nurses' observation of in-patients' behaviour in the ward during past week only (nurses' section of the Disability Assessment Schedule)

	Number (%) of patients for whom behaviour was recorded as		
	Normal/not Present Schizophrenia/ Other	Present in Moderate degree Schizophrenia/ Other	Present in severe degree Schizophrenia/ Other
Slowness	69.4/86.8	25.0/7.4	5.6/5.9
Underactivity***	58.1/83.8	31.9/11.8	10.0/4.4
Overactivity	73.1/61.8	20.0/30.9	6.9/7.4
Reduced conversation	81.9/92.6	16.3/7.4	1.3/0
Social withdrawal*	52.5/70.6	36.3/22.1	11.3/7.4
Lack of leisure interests	72.5/86.8	18.1/10.3	9.4/2.9
Irrelevant talk****	64.4/88.2	15.0/5.9	20.0/5.9
Posturing and mannerisms	75.0/64.7	8.8/11.8	16.3/23.5
Violent behaviour	78.8/67.6	13.1/16.2	8.1/16.2
Remaining in bed****	51.9/79.4	27.5/13.2	20.6/7.4
Abnormal dress and general appearance	60.6/73.5	33.8/23.5	5.6/2.9
Abnormal mealtime behaviour	89.4/94.1	8.1/5.9	2.5/0

For one patient assessment was deemed not possible for reduced conversation due to a hearing impairment.

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 8 - Nurses' opinions of in-patients

(nurses' section of the Disability Assessment Schedule)

Situation	Number (%) of patients		
	Not suitable Schizophrenia/ Other	Suitable Schizophrenia/ Other	Not applicable Schizophrenia/ Other
To do work in hospital	63.1/73.5	36.9/26.5	
To possess matches	61.3/67.6	38.8/32.4	
To visit relatives	66.9/72.1	33.1/27.9	
To go out with opposite sex	62.5/73.5	37.5/26.5	
To possess scissors			✓
To handle money	67.5/66.2	32.5/33.8	
To work outside hospital			✓
To be discharged	26.3/30.9	73.8/69.1	
To be in open room	44.4/42.6	55.6/57.4	

No significant differences found.

Table 9 - Patients' level of function on the ward

(nurses' section of the Disability Assessment Schedule)

Activity	Number (%) of patients Schizophrenia/Other
Housekeeping on ward****	
None	26.3/13.2
Very little	32.5/19.1
Fair	30.0/32.4
Above normal	11.3/35.3
Not applicable	-
Work therapy	
None	43.8/48.5
Supervised	16.9/17.6
Kitchen etc	31.3/26.5
Service department	7.5/7.4
Individual work	0.6/0
Outside	-
Not applicable	-
Occupational therapy*	
None	41.9/57.4
1-2 hours	-
3-4 hours	-
Occasional	4.4/7.4
Daily	49.4/35.3
Industrial	4.4/0
Not applicable	-
In-patient social therapy****	
None	41.3/13.2
1-2 hours	0.6/0
3-4 hours	-
Occasional	32.5/25.0
Daily	25.6/61.8
Not applicable	-

*$p<0.05$, **$p<0.01$, ***$p<0.005$, ****$p<0.001$

Table 10 - Patients' contact with outside world

(nurses' section of the Disability Assessment Schedule)

Type of contact	Number (%) of patients Schizophrenia/Other
Visits during past three months	
No visits	34.4/35.3
Less than once a week	44.4/36.8
About once a week	21.3/27.9
Patient in hospital less than a week	-
Not applicable	-
Visits home during past three months	
No visit home during past three months	83.1/83.8
Visited home once	12.5/13.2
Visited home more than once	4.4/2.9
Patient in hospital less than a week	-
Not applicable	-
Need for supervision for security reasons	
Not allowed outside ward without escort	53.8/63.2
Only allowed out of ward when supervised	46.3/36.8
Can use hospital grounds without asking permission	-
Can go outside hospital with permission	-
Can go outside hospital without asking permission	-
Not applicable	
Reasons for intensive supervision	
No constant supervision	64.4/67.6
May try to escape	1.3/0
May wander away	1.9/0
May be aggressive or threatening	18.1/10.3
May be destructive (to property)	0.6/2.9
Appearance may be frightening to others	0/1.5
Risk of suicide	2.5/5.9
Other reason	10.0/7.4
Not applicable	1.3/4.4

No significant differences found.

Security Needs Assessment

The responsible medical officer of 156 patients with schizophrenia and 69 others was interviewed.

Table 11

Security Needs Assessment	Schizophrenia	Other
Patient said to require the full security provided by the State Hospital	50 (32.1%)	34 (49.3%)
Patient said not to require the full security provided by the State Hospital	91 (58.3%)	29 (42.0%)
No view expressed	15 (9.6%)	6 (8.7%)

p=0.044

Twenty-four (15.4%) schizophrenic patients were said not to require the security of the State Hospital but transfer or discharge proceedings had not been commenced. In 23 cases the reason given for this was a lack of facilities in the patient's local area.

Discussion

Schizophrenia is the major diagnosis leading to admission to maximum security psychiatric care in Scotland. Differences between the State Hospital and the Special Hospital population (Taylor, 1998) can largely be explained by the smaller personality disorder cohort resident in the State Hospital. However, within studies of the Special Hospitals there are variations in the numbers found with a primary diagnosis of psychosis or personality disorder. This may be explained by the method employed to make diagnoses. Taylor et al (1991) used legal classification; Maden et al (1993) assigned diagnoses following a panel discussion based on information collected from casenotes, patient and responsible medical officer interview; and Taylor et al (1998) made an ICD-10 diagnoses based on casenotes. Direct comparison is not possible between the Maden et al (1993) and the Taylor et al (1998) studies as the former assigned up to three diagnoses per patient and the latter used primary diagnosis. The comprehensive nature of the psychotic symptoms experienced by State Hospital patients was demonstrated by data from the Present State Examination Syndrome Checklist (Wing et al, 1974). The influence of specific symptoms likely to lead to violence has been recognised (Buchanan, 1993; Taylor and Monahan, 1996). Threat control override, which includes persecutory delusions and passivity phenomena, (Link and Stueve, 1994) has been associated with violence. Over 80% of patients with schizophrenia in the State Hospital had persecutory delusions and nuclear symptoms, which encompasses passivity phenomena, at some time. Almost 70% were psychotic at the time of the index event leading to admission.

Co-morbidity was common. For example, a diagnosis of co-morbid schizophrenia and substance abuse was made in 22% of patients and intoxication or withdrawal at

the time of the offence or behaviour leading to admission was an issue in over a third of cases. Research has shown that substance abuse appears to have a synergistic effect on people with mental disorders making violence more likely (Swanson et al, 1990; Scott et al, 1998; Steadman et al, 1998).

Patients with schizophrenia in comparison to the other residents of the State Hospital were 3 years older, and had experienced significantly more admissions to psychiatric hospitals. They had a significantly greater history of previous psychiatric treatment and of symptoms on the lifetime PSE including those indicative of psychosis as well as depression and irritability. It was unsurprising to find that more had in the past or were in the present receiving antipsychotic medication, and that more had described hallucinations and delusions, and displayed flattening of affect at interview. In view of the increased medication in this cohort it was consistent to find that more had bradykinesia, tremor, autonomic side-effects and akathisia. Significantly more of the schizophrenic cohort were psychotic at the time of the index event leading to admission and more had been non compliant with medication at that time. More in general abused alcohol and drugs than in the other group.

The results of the Disability Assessment Schedule were again consistent with a diagnosis of schizophrenia. The schizophrenic cohort had poorer self care, or were more underactive, slowed up, or withdrawn. They spent more time in bed and their speech was often irrelevant. Significantly fewer were able to do housekeeping on the ward or went to social therapies although more went to occupational therapy. Significantly more of the schizophrenic cohort were said not to need the full security of the State Hospital.

Caution is required in making generalised statements about the "other cohort". It is a heterogeneous group consisting of patients with mental retardation (32, 44.4%), anti-social personality disorder (13, 18.1%), depression (6, 8.3%), alcoholism and drug abuse (5, 6.9%), organic brain syndrome (4, 5.6%), mania (2, 2.8%), paedophilia (1, 1.4%) and undiagnosed psychiatric syndrome (9, 12.5%). The last group is highly likely to contain individuals with schizophrenia who fail to meet the

6 month duration criterion. As a cohort significantly more had a history of birth problems and abnormal infant development. More attended remedial education or schools for children with behavioural problems. More had been sexually abused. They had more chronic physical conditions including epilepsy. Prescription of anti-convulsant medication was therefore commoner in this group.

There appeared to be three reasons for admission to high security care for patients with schizophrenia. Firstly, a violent act precipitated by a psychotic belief. For example, a matricide arising from the belief that mother had been replaced by an alien. Secondly, increasingly, or persistently, aggressive behaviour in conjunction with apparent treatment resistance. The relatively young age of patients, length of psychiatric history and level of medication suggest chronic and treatment resistant disease in many cases. For example, multiple assaults by a patient in a local psychiatric setting with no response to optimum tolerated medication. Lastly, offending behaviour that appears to be unrelated to any symptoms of a major psychotic disorder although these may be present and can always be argued to have impaired judgement. For example a patient with known schizophrenia and ongoing symptoms who commits a serious assault whilst intoxicated, following an argument in a public house. There is clear evidence of the synergistic effect of alcohol or drug misuse on schizophrenia leading to violence.

Chapter IV - Offenders and Prisoners

It is a common public misconception that everyone in a high security hospital has committed a heinous crime. There are three sources of admission to the State Hospital: another psychiatric hospital, court and prison. Patients are detained under civil legislation, legislation employed by courts in criminal cases and legislation allowing transfer of remand or convicted prisoner to psychiatric hospital. Using legal detention status this chapter compares "patients, "offenders" and "prisoners".

Aim

1. To describe and compare the offender, prisoner and patient cohorts in the State Hospital.

Method

Patients were divided according to their legal status into an offender, prisoner or patient cohort. An offender was defined as any patient detained under the Criminal Procedure (Scotland) Act 1975. This includes patients detained under the following provisions: committal of an accused person to hospital (section 25 and 330); disposal in cases of insanity (section 174 and 375); remand for inquiry into mental condition (section 180 and 381); interim hospital order (section 174a and 375a); hospital order and guardianship (section 175 and 376); restrictions on discharge (section 178 and 379); and admission to the State Hospital (section 175(4) and 376(7)). Prisoners were defined as those detained under the relevant sections of the Mental Health (Scotland) Act 1984 that permit transfer from prison to hospital. The transfer order (section 70) allows removal to hospital of a person in prison awaiting trial. A transfer direction (section 71) permits removal to hospital of convicted prisoners and a restriction on discharge may be added to this (section 72). A patient was defined as someone detained under Part V of the Mental Health (Scotland) Act 1984, that is civil detention (section 18). Legal status was used to define the

subgroups rather than source of admission as it more accurately describes an individual. For example, a patient may be transferred to a local psychiatric hospital from prison but prove to be unmanageable there and therefore require transfer to the State Hospital. If source of admission was used as the defining characteristic then that individual would be placed in the patient rather than prisoner category when clearly the latter is more appropriate. The nature of the data obtained and means of collection is described in chapter one.

All variables were compared statistically and where significant differences were found these are recorded in the results section. Data were analysed to compare the patient, offender and prisoner cohorts using ANOVA for continuous variables, and the chi-square test for categorical variables. Significant 2-tailed test results are reported unless otherwise stated as a 1-tailed test. The post hoc Tukey test was employed. Where findings were significant using all variable groups but more than 20% of cells had less than 5, groups were coalesced, for example into single or not. N.S. is used to mark a non-significant result.

Results

There were 53 patients (22%), 144 offenders (59.8%) and 44 prisoners (18.3%) in the study population. Eight of the offenders were on remand, six had been convicted but were awaiting final disposal, and 130 had been convicted and disposed of to the Mental Health system. Of these 28 had been found insane in bar of trial or acquitted on the grounds of insanity, 100 were subject to a hospital order with 55 having restrictions on discharge, and two were detained under a provision to admit to a State Hospital. Three of the prisoners were on remand, 37 were convicted with all but two having restrictions on discharge, and three prisoners had time expired sentences but detention had been continued. One prisoner was subject to both sections 71 and 72, and sections 175 and 178. He had been convicted of rape and whilst serving a sentence stabbed another inmate. He was initially transferred to the State Hospital as a prisoner and then convicted of the second offence. He was placed in the prisoner category.

A basic demographic description of the three groups is contained in Table 1.

Table 1 - Demographic Description

	Patient	Offender	Prisoner
Age	35.3 years (19-60)	34.9 years (17-67)	32.6 years (19-57)
Sex – male	43 (81.1%)	129 (89.6%)	41 (93.2%)
Marital status – single	47 (88.7%)	119 (82.6%)	35 (79.5%)
Socio economic class III manual-V : unknown^	25 (47.2%) : 17 (32.1%)	81 (56.2%) : 40 (27.8%)	21 (47.7%) : 22 (50%)

^p=0.023

Diagnosis

Primary diagnosis is shown in Table 2.

Table 2 - Primary Diagnosis

	Patient	Offender	Prison
Schizophrenia	43 (81.2%)	94 (65.3%)	32 (72.7%)
Depression	-	5 (3.5%)	1 (2.3%)
Mania	-	-	2 (4.5%)
Antisocial personality disorder	2 (3.8%)	7 (4.9%)	4 (9.1%)
Alcoholism	-	2 (1.4%)	2 (4.5%)
Drug dependence	-	-	-
Mental retardation	5 (9.4%)	25 (17.4%)	2 (4.5%)
Organic brain syndrome	1 (1.9%)	3 (2.1%)	-
Undiagnosed psychiatric illness	2 (3.8%)	7 (4.9%)	1 (2.3%)
No diagnosis - paedophilia	-	1 (0.7%)	-

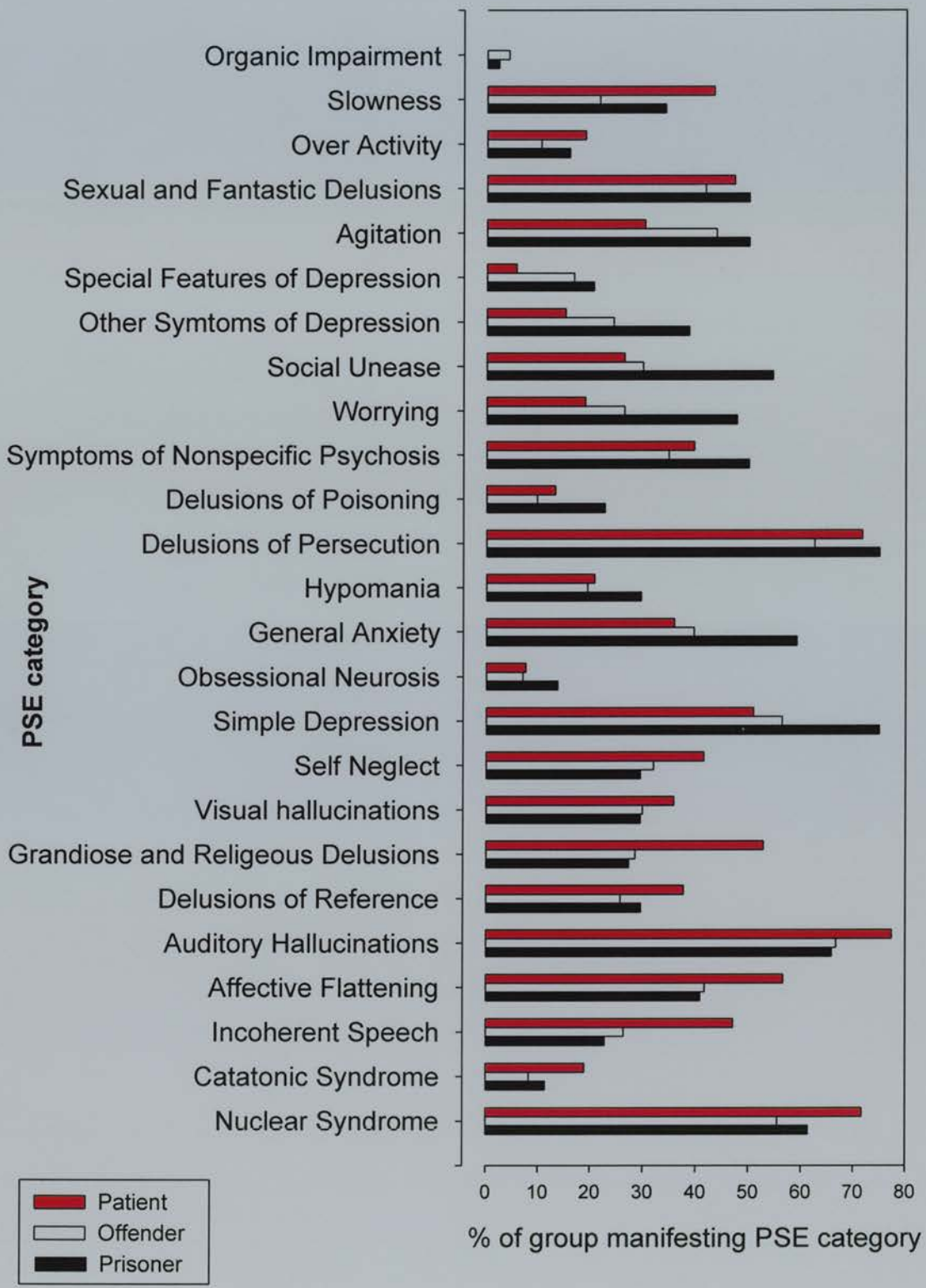
No significant differences found.

Multiple diagnoses were common in each group: patient 43.4%, offender 60.4% and prisoner 63.6%. As a percentage of the total number of diagnoses per cohort, schizophrenia was more prevalent in the patient group (patient 47.8%, offender 34.1%, prisoner 34%); secondary depression was commoner in the prisoner group (3.3%, 5.4%, 7.4%), as were alcohol (11.1%, 12.7%, 18.1%) and drug (7,8%, 12.3%, 16.0%) misuse; and learning disability was reduced in the prisoner group (10%, 10.1%, 4.3%). A primary diagnosis of antisocial personality disorder (ASPD) was greater in the prisoner cohort (patient 3.8%, offender 4.9%, prisoner 9.1%) whereas a primary or secondary diagnosis of ASPD was greatest in offenders

(patient 33.3%, offender 41.3%, prisoner 37.5%). None of these findings were statistically significant.

Different symptom patterns appeared for the three groups on examination of the present state examination syndrome checklist (see figure 1). The patient group had a statistically greater history of incoherent speech ($p<0.001$), grandiose and religious delusions ($p=0.004$), and slowness ($p=0.007$). The prisoner group was characterised by more general anxiety ($p=0.010$), worry ($p=0.009$), social unease ($p=0.005$), special features of depression ($p=0.048$) and other symptoms of depression ($p=0.029$). The offender group tended to come in the middle between the patient and prisoner groups regardless of what constellation of symptoms was examined.

Figure 1 - Prevalence of PSE factors among patients, offenders and prisoners



Psychiatric History

By definition all members of the patient group had received previous in-patient hospital care and approximately a tenth of both the offender and prisoner group had no psychiatric history ($p<0.001$). Almost four fifths of the offender group had received previous in-patient care compared to 45.5% of the prisoner group. Over a third of the prisoner group had however received previous psychiatric treatment in prison. The average number of previous psychiatric admissions for the prisoner group was two (range 1-8) compared to five in the offender group (1-33) and seven in the patient group (1-46) ($p=0.001$). There was a corresponding difference in the length of total time spent in psychiatric hospital: patients 12 years 11 months, offenders 9 years 9 months, and prisoners 3 years 7 months ($p<0.001$). A fifth of both patients and prisoners had been refused admission to the State Hospital in the past compared to only 6.3% of the offender group ($p=0.002$). Approximately one-fifth to one-quarter had had a previous admission (patient 15 (28.3%), offender 28 (19.4%), prisoner 12 (27.3%), N.S.). Self-harm was common in all groups (58.5% patient, 61.1% offender, 65.9% prisoner, N.S.).

More of the patient group had received oral (98.1% patient, 84.7% offender, 93.2% prisoner, $p=0.017$) and depot (88.7%, 66.7%, 65.9%, $p=0.007$) antipsychotic medication, lithium (37.7%, 19.4%, 15.9%, $p=0.012$), benzodiazepines (47.2%, 29.9%, 27.3%, $p=0.048$), anti-cholinergic preparations (77.4%, 58.3%, 54.5%, $p=0.028$), anti-convulsants (41.5%, 27.1%, 18.2%, $p=0.033$), and ECT (45.3%, 19.4%, 6.8%, $p<0.001$). More of the prisoner cohort had received antidepressants but this was not a significant finding (28.3%, 35.4%, 47.7%).

State Hospital Admission

The source of admission was significantly related to legal status ($p<0.001$). One hundred and five (72.9%) of the offender group were admitted from court. The remainder came from prison (remand 3.5% and sentenced 2.1%) or local psychiatric hospitals (21.5%). One individual in the patient group was admitted from court. This was a local hospital patient who cut his girlfriend with a glass whilst psychotic. He was initially admitted under a provision for insanity in bar of trial under the

Mental Health (Scotland) Act 1960 but he was detained under a section 18 of the Mental Health (Scotland) Act 1984 at the time of the study. The remainder of the patient group (98.1%) was admitted from local psychiatric hospitals. All but four of the prisoner group were admitted from prison (adult prison – remand 3, adult prison – sentenced 31, young offenders institution – sentenced 6). The other four had stays in a local psychiatric hospital prior to their transfer to the State Hospital. Four patients in total were admitted from a special hospital in England: one in the patient group, two in the offender group and one in the prisoner group. The reason for admission including the index offence and behavioural problems are described in Chapter 1. Only 1 (1.9%) patient was admitted directly because of an offence compared to 2 (4.5%) prisoners and 114 (79.2%) offenders ($p<0.001$). The offences carried out by the patient and prisoners were not serious. About one-fifth of offenders were not admitted directly because of an index offence but had been previously convicted and were given a mental health disposal. Psychosis as a known precipitant to the behaviour or offence leading to admission was present in 30 (56.6%) patients, 67 (46.5%) offenders and 35 (79.5%) prisoners ($p=0.001$). Other precipitants, such as an argument, were present in a tenth of patients, a fifth of offenders and a twentieth of prisoners ($p=0.050$). Alcohol was a known precipitant in a quarter of offender cases but only 3.8% of patient and 4.5% of prisoner cases ($p<0.001$). Drug abuse was a precipitant for 7.6% of offenders and only 1 (2.3%) prisoner (N.S.). Drug and alcohol withdrawal was a precipitant for 8 (15.1%) patients, 22 (15.3%) offenders and 3 (6.8%) prisoners (N.S.). Failure to take prescribed medication was an issue for 3 (5.7%) patients, 14 (9.7%) offenders and 10 (22.7%) prisoners (N.S.).

Forensic History

Over half of the patient group had a forensic history (29/54.7%). This rose to almost 90% for the offender group (127/88.2%) and to nearly 100% for the prisoner group (43/97.7%) ($p<0.001$). A charge sheet was present in the notes of 35.8% of patients, 63.9% of offenders and 81.8% of prisoners ($p<0.001$). The mean number of previous convictions for both patients and offenders was ten but this rose to twenty for prisoners ($p=0.001$). A more serious history of offending was present in the

prisoner group. Eighteen (40.9%) prisoners had committed homicide, as had five (3.5%) offenders and one (1.9%) patient ($p<0.001$). Sexual crimes (patient 3(5.7%), offender 18 (12.5%), prisoner 13 (29.5%), $p=0.002$) and crimes of dishonesty (patient 13 (24.5%), offender 70 (48.6%), prisoner 30 (68.2%), $p<0.001$) were also more common in the prisoner group.

Background History

Problems arising at birth occurred in about one third of each group and about 30% went on to have some form of abnormal infant development. Significant childhood problems such as parental separation were slightly higher in the prisoner and offender groups (75%, 74.3%) than the patient group (67.9%) but this was not statistically significant. Almost a third of the prisoner group attended list D school but this was high for all groups (20.8% patient, 18.3% offender, 29.5% prisoner, N.S.). Fewer prisoners had remedial education on account of a learning difficulty (17% patient, 19.4% offender, 6.8% prisoner, N.S.). Academic attainment was similar for all cohorts.

Physical abuse was more common in the prisoner group (25%) compared to the patient (9.4%) or offenders groups (17.4%) . Sexual abuse was commoner in the offender group (17.4%) compared to the patient (7.5%) or prisoner (13.6%) groups. Neither of these reached statistical significance.

Heavy or abusive use of alcohol was more prevalent in prisoners (63.6%) than patients (39.6%) or offenders (47.2%) ($p=0.055$). A similar pattern was seen for a history of drug abuse (patients 26.4%, offenders 49.3%, prisoners 63.6%) ($p<0.001$). Just over a tenth of both offenders and prisoners had a history of intravenous drug abuse whereas this only applied to two (3.8%) patients (N.S.).

A family history of drug or alcohol abuse was much commoner in prisoners. Forty-one percent of fathers ($p=0.048$) and 13.6% of mothers (N.S.) of prisoners had abused substances compared to just over one-fifth of fathers in the offender and

patient cohorts, and one-tenth of mothers in the offender cohort and one-twentieth of mothers in the patient cohort.

A current physical illness was commoner in the patient group (52.8%) compared to the offender (44.4%) or prisoner (36.4%) cohorts although this was not statistically significant whereas it was for epilepsy (26.4%, 17.4%, 6.8%, p=0.040).

Current Medication

Of the 234 prescription sheets studied, 51 belonged to patients, 141 to offenders and 42 to prisoners. Slightly more offenders were receiving oral neuroleptic medication (patients 56.9%, offenders 68.1%, prisoners 52.4%, N.S.) but the average daily dose was higher in the patient group (909 mg) than offenders (745mg), or prisoners (714 mg) (N.S.). The use of depot medication was similar in each cohort (49.0% patient, 50.4% offender, 45.2% prisoner, N.S.) although the average daily dose was higher in prisoners (patient 768 mg, offender 1,024 mg, prisoner 1,051 mg, N.S.). For those receiving both oral and depot medication the average dose in all three groups varied to a non-significant degree (patient 2,109mg; offender 2,013mg; prisoner 2021mg, N.S.). Almost a tenth of patients, offenders and prisoners were prescribed clozapine. More of the offender group received lithium (3.9% patient, 12.1% offender, 7.1% prisoner, N.S.). Hypnotic drugs were not used at all as a regular prescription in the prison population and were used rarely in the other groups (6.0%, 5.0%, 0, N.S.). Antidepressants (15.7%, 17.0%, 16.7%) and anticonvulsants were used with similar frequency in all groups (15.7%, 17.0%, 16.7%). Approximately half of each group received anti-Parkinsonian drugs on a regular or as required basis. Only one patient and two offenders were prescribed anti-libidinal medication.

Patient Interview

Of 227 patient interviews, 52 were in the patient group, 134 in the offender group and 41 in the prisoner group.

Table 3 - Results of the individual items of the Krawiecka scale

Item	%0 Patient/ offender/ Prisoner	%1 Patient/ offender/ Prisoner	%2 Patient/ offender/ Prisoner	%3 Patient/ offender/ Prisoner	%4 Patient/ offender/ Prisoner
Depression	71.2/59.0/43.9	5.8/10.4/14.6	21.2/24.6/39.0	1.9/6.0/2.4	-
Anxiety	71.2/73.1/70.7	9.6/7.5/4.9	15.4/13.4/24.4	3.8/6.0/0	-
Incongruity of Affect*	76.9/91.8/90.2	-	15.4/5.2/7.3	5.8/3.0/2.4	1.9/0/0
Flattening of Affect***	42.3/67.9/68.3	-	23.1/14.2/22.0	21.2/14.9/9.8	13.5/3.0/0
Retardation*	84.6/94.8/95.1	-	5.8/4.5/0	5.8/0.7/4.9	3.8/0/0/
Hallucinations	65.4/76.9/73.2	0/3.0/0	0/1.5/2.4	5.8/3.0/4.9	28.8/15.7/19.5
Delusions****	34.6/64.2/41.5	-	3.8/1.5/4.9	3.8/7.5/19.5	57.7/26.9/34.1
Incoherence of Speech****	67.3/90.3/92.7	-	11.5/5.2/4.9	17.3/4.5/2.4	3.8/0/0
Poverty of Speech/ Muteness	90.4/97.0/97.6	1.9/0.7/0	1.9/2.2/2.4	1.9/0/0	3.80/0

Possible range for each item is 0-4 (higher scores indicating greater disability)

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 4 - Results of the individual items of the Montgomery-Asberg scale

Item	%0 Patient/ offender/ Prisoner	%1 Patient/ offender/ Prisoner	%2 Patient/ offender/ Prisoner	%3 Patient/ offender/ Prisoner	%4 Patient/ Offender/ Prisoner	%5 Patient/ Offender/ Prisoner	%6 Patient/ offender/ Prisoner
Apparent sadness	92.3/ 86.6/ 92.7	- 3.0/ -	3.8/ 6.0/ 4.9	1.9/ 3.7/ 2.4	1.9/ 0.7/ -	- - -	- - -
Reported sadness	73.1/ 61.2 48.8	5.8/ 8.2/ 12.2	13.5/ 20.1/ 31.7	5.8/ 5.2/ 7.3	1.9/ 4.5/ -	- 0.7/ -	- - -
Inner tension	71.2/ 74.6/ 73.2	5.8/ 3.7/ 4.9	13.5/ 9.7 19.5	9.6/ 9.7/ 2.4	- 2.2/ -	- - -	- - -
Reduced sleep	94.2/ 88.1/ 87.8	- 0.7/ -	1.9/ 4.5/ 7.3	1.9/ 2.2/ 2.4	- 3.0/ -	1.9/ 0.7/ 2.4	- 0.7/ -
Reduced appetite	98.1/ 92.5/ 95.1	- 3.0/ -	- 1.5/ 4.9	1.9/ 2.2/ -	- 0.7/ -	- - -	- - -
Concentration difficult	51.9/ 56.0/ 36.6	- 1.5/ 2.4	21.2/ 16.4/ 26.8	13.5/ 15.7/ 22.0	11.5/ 9.7/ 12.2	1.9/ 0.7/ -	- - -
Lassitude*	50.0/ 61.2/ 43.9	3.8/ 3.7/ -	15.4/ 24.6/ 41.5	17.3/ 6.7/ 7.3	11.5/ 3.7/ 7.3	1.9/ - -	- - -
Inability to feel	90.4/ 93.3/ 90.2	- 0.7/ -	3.8/ 5.2/ 7.3	1.9/ - 2.4	3.8/ 0.7 -	- - -	- - -
Pessimistic Thoughts	88.5/ 79.9/ 82.9	- 3.7/ -	9.6/ 11.9/ 14.6	1.9/ 3.7/ -	- 0.7/ 2.4	- - -	- - -
Suicidal thoughts	75.0/ 81.3/ 78.0	1.9/ 0.7/ -	17.3/ 10.4/ 12.2	1.9/ 4.5/ 4.9	3.8/ 3.0/ 4.9	- - -	- - -

Possible range for each item is 0-6 (higher scores indicating greater disability)

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 5 - Results of individual AIMS items

Item	%0 Patient/ offender/ Prisoner	%1 Patient/ offender/ Prisoner	%2 Patient/ offender/ Prisoner	%3 Patient/ Offender/ Prisoner	%4 Patient/ offender/ Prisoner
Muscles of facial expression	98.1/99.3/100	-	1.9/0/0	0/0.7/0	-
Lips and perioral area	100/100/97.6	-	-	0/0/2.4	-
Jaw	86.5/93.3/90.2	3.8/0.7/0	9.6/2.2/7.3	0/3.7/2.4	-
Tongue	73.1/86.6/82.9	1.9/3.7/9.8	7.7/3.0/0	9.6/3.7/2.4	7.7/3.0/4.9
Upper Limbs	88.5/89.6/95.1	-	1.9/3.7/0	9.6/6.7/4.9	-
Lower Limbs	96.2/98.5/100	-	1.9/0.7/0	1.9/0.7/0	-
Neck, shoulders, hips	96.2/99.3/100	-	1.9/0.7/0	1.9/0/0	-
Severity of abnormal movement	57.7/77.6/78.0	3.8/6.0/7.3	23.1/9.7/7.3	15.4/6.0/7.3	0/0.7/0
Incapacity by abnormal Movement	63.5/83.6/85.4	21.2/9.7/7.3	15.4/5.2/7.3	0/1.5/0	-
Awareness of abnormal Movement	90.4/93.3/95.1	5.8/6.0/2.4	3.8/0.7/2.4	-	-

Possible range for each item is 0-4 (higher scores indicating greater disability)

No significant differences found.

Table 6 - Results of individual TAKE items

Item	%0 Patient/ offender/ Prisoner	%1 Patient/ offender/ Prisoner	%2 Patient/ offender/ Prisoner	%3 Patient/ Offender/ Prisoner	%4 Patient/ offender/ Prisoner
Bradykinesia	44.2/57.5/58.5	1.9/3.7/0	17.3/22.4/17.1	36.5/16.4/24.4	-
Rigidity*	75.0/86.6/68.3	3.8/1.5/0	5.8/7.5/22.0	15.4/4.5/9.8	-
Tremor	38.5/36.6/29.3	0/4.5/0	28.8/29.1/31.7	28.8/26.1/39.0	3.8/3.7/0
Autonomic side-effects***	51.9/77.6/63.4	3.8/3.7/0	28.8/14.2/31.7	13.5/4.5/4.9	1.9/0/0
Akathisia*	53.8/56.7/34.1	7.7/1.5/0	23.1/26.9/43.9	15.4/14.9/19.5	0/0/2.4
Overall severity of side-effects**	11.5/21.8/12.2	13.5/24.8/12.2	46.2/40.6/53.7	28.8/12.8/22.0	-
Incapacitation by side-effects	26.9/49.3/24.4	46.2/38.1/56.1	23.1/9.7/19.5	3.8/3.0/0	-
Awareness of side-effects	67.3/59.7/39.0	26.9/32.1/53.7	5.8/7.5/7.3	0/0.7/0	-

Possible range for each item is 0-4 (higher scores indicating greater disability)

*$p<0.05$, **$p<0.01$, ***$p<0.005$, ****$p<0.001$

Psychology Interview

No significant differences were found between the groups on pre-morbid or current I.Q. testing. Mean pre-morbid I.Q.: patient 93.6, offender 95.3, prisoner 91.8. Mean current I.Q.: patient 84.7, offender 88.4, prisoner 88.7.

Nursing Interview

The nursing key worker was interviewed for 50 patients, 135 offenders and 43 prisoners. Data were unavailable for 43 patients in table 7: 16% from the patient cohort, 21.5% from the offenders and 14% from the prisoners. A 9 was rated if no assessment was possible and therefore not all columns in the following tables add up to 100%.

Table 7 - Nurses' observation of in-patients' behaviour in the ward over the past month (nurses' section of the Disability Assessment Schedule)

	No dysfunction Patient/ offender/ Prisoner	Minimum dysfunction Patient/ offender/ Prisoner	Obvious Dysfunction Patient/ offender/ Prisoner	Serious Dysfunction Patient/ offender/ Prisoner	Very serious dysfunction Patient/ offender/ Prisoner	Maximum dysfunction Patient/ offender/ Prisoner
Self care	50.0/	18.0/	20.0/	6.0/	4.0/	2.0/
	69.6/	14.8/	8.1/	4.4/	0.7/	2.2/
	76.7	14.0	4.7	4.7	-	-
Underactivity	64.0/	6.0/	20.0/	2.0/	6.0/	2.0/
	66.7/	14.8	6.7/	7.4/	3.0/	1.5/
	72.1	14.0	7.0	7.0	-	-
Slowness	71.4/	11.9/	14.3/	-	-	2.4/
	76.4/	8.5/	10.4/	1.9/	0.9/	1.9/
	73.0	10.8	16.2	-	-	-
Social withdrawal	66.7/	9.5.0/	7.1/	9.5/	2.4/	4.8/
	61.3/	18.9/	11.3/	2.8/	3.8/	1.9/
	56.8	29.7	5.4	5.4	2.7	-

No significant differences found.

Table 8 - Nurses: observation of in-patients' behaviour in the ward during week only (nurses' section of the Disability Assessment Schedule)

	Number (%) of patients for whom behaviour was recorded as:		
	Normal/not Present Patient/ Offender/ Prisoner	Present in morbid degree Patient/ Offender/ Prisoner	Present in severe degree Patient/ Offender/ Prisoner
Slowness	70.0/77.0/72.1	20.0/17.0/27.9	10.0/5.9/0
Activity	58.0/66.7/72.1	30.0/25.2/23.3	12.0/8.1/4.7
Overactivity**	52.0/74.1/76.7	38.0/19.3/18.6	10.0/6.7/4.7
Reduced concentration	76.0/88.9/83.7	24.0/8.9/16.3	0/1.5/0
Social withdrawal	58.0/57.8/58.1	26.0/35.6/27.9	16.0/6.7/14.0
Lack of leisure interests	74.0/75.6/83.7	16.0/19.3/4.7	10.0/5.2/11.6
Irrelevant talk****	50.0/74.1/88.4	10.0/13.3/11.6	40.0/11.9/0
Posturing and mannerisms	72.0/72.6/69.8	8.0/11.9/4.7	20.0/15.6/25.6
Violent behaviour	68.0/74.8/86.0	18.0/14.8/7.0	14.0/10.4/7.0
Remaining in bed*	46.0/68.1/51.2	34.0/18.5/25.6	20.0/13.3/23.3
Abnormal dress and behaviour****	38.0/68.1/83.7	52.0/27.4/16.3	10.0/4.4/0
Abnormal mealtime behaviour***	78.0/94.1/95.3	18.0/4.4/4.7	4.0/1.5/0

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001
No comment was made on concentration and irrelevant talk for one patient each.

Table 9 - Nurses' opinions of in-patients (nurses' section of the Disability Assessment Schedule)

Situation	Number (%) of patients		
	Suitable Patient/ Offender/ Prisoner	Not suitable Patient/ Offender/ Prisoner	Not applicable Patient/ Offender/ Prisoner
To do work in hospital***	48.0/68.9/79.1	52.0/31.1/20.9	
To possess matches****	36.0/68.1/79.1	64.0/31.9/20.9	
To visit relatives	74.0/65.9/69.8	26.0/34.1/30.2	
To go out with opposite sex***	50.0/65.2/86.0	50.0/34.8/14.0	
To possess scissors			√
To handle money****	46.0/69.6/83.7	54.0/30.4/16.3	
To work outside hospital			√
To be discharged	18.0/31.1/27.9	82.0/68.9/72.1	
To be in open room	30.0/49.6/41.9	70.0/50.4/58.1	

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 10 - Patients' level of function on the ward

(nurses' section of the Disability Assessment Schedule)

Activity	Number (%) of patients Patient/Offender/Prisoner
Housekeeping on ward**	
None	26.0/20.0/25.6
very little	44.0/25.2/20.9
Fair	20.0/34.1/32.6
above normal	10.0/20.7/20.9
not applicable	-
Work therapy	
None	42.0/39.3/67.4
Supervised	20.0/18.5/9.3
kitchen etc	34.0/31.9/18.6
service department	4.0/9.6/4.7
Individual work	0/0.7/0
Outside	-
not applicable	-
Occupational therapy	
None	36.0/45.9/60.5
1-2 hours	-
3-4 hours	-
Occasional	6.0/5.9/2.3
Daily	58.0/43.0/37.2
Industrial	0/5.2/0
not applicable	-
In-patient social therapy	
None	22.0/34.8/39.5
1-2 hours	0/0.7/0
3-4 hours	-
Occasional	32.0/33.3/18.6
Daily	46.0/31.1/41.9
not applicable	-

*p<0.05, **p<0.01, ***p<0.005, ****p<0.001

Table 11 - Patients' contact with outside world

(nurses' section of the Disability Assessment Schedule)

Type of contact	Number (%) of patients Patient/Offender/Prisoner
Visits during past three months	
no visits	30.0/37.0/32.6
less than once a week	52.0/37.8/44.2
about once a week or more often	18.0/25.2/23.3
Patient in hospital less than a week	-
not applicable	-
Visits home during past three months	
None	86.0/84.4/76.7
visited home once	14.0/10.4/18.6
visited home more than once	0/5.2/4.7
patient in hospital less than a week	-
not applicable	-
Need for supervision for security reasons	
not allowed outside ward without escort	68.0/50.4/62.8
only allowed out of ward when supervised	32.0/49.6/37.2
can use hospital grounds without asking permission	-
can go outside hospital with permission	-
can go outside hospital without asking permission	-
not applicable	-
Reasons for intensive supervision	
no constant supervision needed	54.0/69.6/65.1
may try to escape	2.0/0.7/0
may wander away	4.0/0.7/0
may be aggressive or threatening	16.0/15.6/16.3
may be destructive	4.0/0/2.3
appearance may be frightening to others	2.0/0/0
risk of suicide	2.0/3.0/7.0
other reasons	14.0/8.1/7.0

For one patient a reason for intensive supervision was not given.

No significant differences found.

Security Needs Assessment

Responsible Medical Officer interviews were carried out for 49 patients, 135 offenders and 41 prisoners.

Table 12 - State Hospital Security Required

Security Needs Assessment	Patient	Offender	Prisoner
Patient said to require the full security provided by the State Hospital	27 (55.1%)	71 (52.6%)	22 (53.7%)
Patient said not to require the full security provided by the State Hospital	16 (32.7%)	58 (37.0%)	18 (43.9%)
No view expressed	6 (12.2%)	14 (10.4%)	1 (2.4%)

No significant differences found.

The transfer/discharge process had been initiated in 34% of patients, 34.7% of offenders and 20.7% of prisoners.

Discussion

Using the classification employed for this chapter, the majority of State Hospital residents are offenders (59.8%), with marginally more patients (22%) than prisoners (18.3%). Most offenders and prisoners had received a final disposal by the court to hospital or prison, rather than continuing to await trial or sentencing.

There are obvious differences between the 3 groups. The patients were more likely to have had a more extensive past psychiatric history and showed more incoherent speech, grandiose and religious delusions, and slowness on the Present State Examination Syndrome Checklist (P.S.E.); and more incongruity, affective flattening, retardation, delusions, incoherence and lassitude at interview. They had been prescribed more antipsychotic medication, lithium, benzodiazepines, anticholinergic drugs and ECT in the past although there were no significant differences between the three cohorts in current prescribing practices. More were noted to complain of autonomic side-effects. The patient cohort had an increased history of epilepsy and more had been treated with anti-convulsant medication in the past. They had less of a criminological history. There were more women in this cohort although this was not a statistically significant finding. Findings on the Disability Assessment Schedule support the concept of more physically and mentally damaged individuals in this group. The patients had more periods of overactivity, more irrelevant talk, an increased tendency to stay in bed, more abnormal dress and behaviour, and more abnormal behaviour at mealtimes. Fewer were deemed fit to work, possess matches, mix with the opposite sex, handle money or do housework.

The offenders whilst the largest cohort, were less distinctive than the other two. This group contained more cases of learning disability (offender 17.4%, patient 9.4%,

prisoner 4.5%, p=0.058). A criminological history was common and offenders were significantly more likely to be admitted following a serious index offence. They were less likely to have been refused admission to the State Hospital previously. Recognised precipitants to the behaviour/offence leading to admission were more often alcohol misuse or an argument. This finding may be factitious as this cohort will have extensive psychiatric court reports in their medical records and these seek to explain aberrant behaviour and explore precipitants closely.

The prisoner cohort had significantly fewer admissions for a total shorter length of time to psychiatric. It was characterised using the P.S.E. lifetime checklist by increased depression, anxiety, worry and social unease. Fewer prisoners could be assigned a socio-economic origin due to lack of information about their fathers, or their fathers' illhealth or death. Psychosis as a factor precipitating admission was commoner in this group. It is good practice to transfer prisoners with major psychotic episodes out of prison for care and treatment. The prisoner cohort had greater rigidity and tremor on examination, and more complained of akathisia. Substance misuse was rarely named as a precipitant to admission but a history of drug and alcohol abuse was significantly more common in this cohort. This may have precipitated more episodes of psychosis than recorded but denial of substance misuse would be typical in this cohort. A greater paternal history of alcohol misuse was also found in the prisoner cohort. Although a smaller number of prisoners had a history of epilepsy than in the other cohorts, this was greater than the general prevalence for prisoners of 7.2/1,000 (Gunn, 1977). Almost all prisoners had a criminological history and this is an expected finding. The differences between the three cohorts may be somewhat exaggerated by the greater proportion of charge sheets found in the casenotes of prisoners. However, the offending histories were of a significantly more serious nature than those committed by the patient and offender cohorts. This is likely to be related to the greater history of substance abuse. In general, at keyworker interview, they were found to be more able than their patient or offender counterparts. This is due to the shorter duration of their illness, less treatment resistance and the increased history of substance abuse with its adverse effects on mental health that is improved by a drug and alcohol free environment.

The differences between the 3 cohorts are not dissimilar to those found by Hughson (1981) in a comparison of offender and non-offender male admissions to the State Hospital between 1966 and 1975, if prisoners and offenders in the current study are combined as an offender group. The obvious difference is greater numbers with a primary diagnosis of personality disorder admitted to both the offender (50%) and non-offender (9.5%) cohorts in the 1966 to 1975 study.

What is of interest in this chapter is the lack of differences between patients, offenders and prisoners in terms of diagnosis, socio-economic background, upbringing, and current presence of aggressive behaviour. Many of the differences found were part of the group defining characteristics, for example index offence and source of admission.

The findings suggest that whilst there is significant psychiatric, physical and social morbidity in each group, the patients are more psychotic whereas the prisoners experience a shorter psychotic illness with more depressive symptoms probably related to their situation. It seems likely that there was significant under-reporting of substance misuse precipitating psychiatric illness and admission in the prisoner cohort given their alcohol and drug histories. In spite of the differences between the three groups no difference was found in the responsible medical officers' assessments of their security needs, although transfer proceedings had been commenced for fewer prisoners. Over half of each cohort was said not to require the full security of the State Hospital.

Chapter V - A Comparison of Patients with Schizophrenia in a Local Setting and in a High Security Setting

There is considerable public concern in the UK about the risk of violence from patients with severe mental illness who have been discharged into the community (Coid, 1996). In the earlier literature review studies of dangerousness and schizophrenia are presented which have suggested factors that are associated with seriously violent behaviour in sufferers from schizophrenia (Glancy, 1992; Marzuk, 1996; Taylor et al, 1998). Among these are delusions present at the time of the violence, paranoid schizophrenia, younger age, male sex, severe stress, loss of social support, drug and alcohol abuse, deprived childhood background, developmental abnormality, personality disorder and poor compliance with treatment.

However, there seem to be few, if any, studies in the literature which approach these issues by a direct comparison of patients with schizophrenia residing in conditions of special security, because of their dangerous, violent or criminal behaviour, with those in the Community. In particular it is of interest to know whether it is a worse schizophrenic process or factors other than schizophrenia per se that is most likely to lead to the need for secure hospitalisation. This chapter compares two large data sets concerning patients with schizophrenia in Scotland. The first survey covered a representative sample of patients with a stringent diagnosis of schizophrenia living in Lothian region and the second all those with schizophrenia in Scotland admitted to conditions of special security in the State Hospital, Carstairs, on account of dangerous, violent or criminal propensities. The researchers (F.L. and L.T.) who carried out the original surveys collaborated at the design stage to ensure comparability of methods of data collection and diagnoses. They also underwent the same training in many of the measurement techniques used in the two studies.

Aims

1. To compare patients with schizophrenia resident in the community with those requiring care in conditions of special security.
2. To determine what factors make admission to special security psychiatric care more likely in a schizophrenic population.

Method

The State Hospital Sample

This consisted originally of all patients resident in the State Hospital between 25th August 1992 and 30th September 1993. Data relevant to this chapter were drawn from casenotes, from clinical interviews with the patients, and from cognitive testing. One hundred and sixty-nine patients had a primary diagnosis of schizophrenia according to the St. Louis criteria (Feighner et al, 1972).

The Community sample (Lang et al, 1997)

This was chosen from patients admitted to the Royal Edinburgh Hospital with a diagnosis of schizophrenia (again according to the St. Louis criteria) in the period 1st January 1987 to 1st January 1992 (the index admission). After excluding patients with organic disorder, data from casenotes were available on 302 patients. This study reports on 193 of these who agreed to participate in a further home interview in which clinical data were obtained and psychological tests carried out. The patients in this sample had at least one hospital admission and are referred to as a community sample because this is where they lived on a permanent basis.

The data available

Data from casenotes consisted of a family history of psychiatric and other illness, the patient's gender, number of siblings, marital status, number of children, age on January 1st 1990, best occupational level, the incidence of abnormalities at birth, abnormal infant development (present or absent), presence of chronic physical

conditions such as epilepsy or asthma, academic attainment as a dichotomy between those who obtained no leaving certificates and those who gained at least one O-grade, history of alcohol and drug abuse, the nature of any police contacts, age at first psychiatric contact and at first admission to a psychiatric hospital, the number of admissions prior to the index admission, the total time spent in hospital prior to the index admission, any history of self-harm, and any experience of Lithium, anticholinergics, antidepressants, benzodiazepines or ECT. A lifetime measure of psychiatric symptoms, as measured by the syndrome checklist of the Present State Examination (PSE, Wing et al, 1974) up to the time of index admission was also derived from casenotes. The information derived from the 38 PSE items was summarised using principal components analysis with varimax rotation. Three factors emerged with eigenvalues of 3.9, 2.1 and 1.6 respectively. The largest loadings on the first factor came from the nuclear syndrome, auditory hallucinations, grandiose delusions, delusions of persecution, incoherent speech and sexual delusions. This factor was labelled 'Positive Schizophrenia'. The second factor, labelled 'anxiety/depression' was loaded mainly by simple depression, general and situational anxiety and social unease. The last factor, termed 'remaining syndromes' was largely made up of the residual syndrome, non-specific psychosis and self-neglect.

Data from an interview with each patient (in the State Hospital or at home) sought to ascertain pre-morbid IQ by the National Adult Reading Test (NART, Nelson and O'Connell, 1982), current IQ by the Quick Test (Ammons and Ammons, 1962), and the current mental state according to the Krawiecka questionnaire (1977).

Analyses

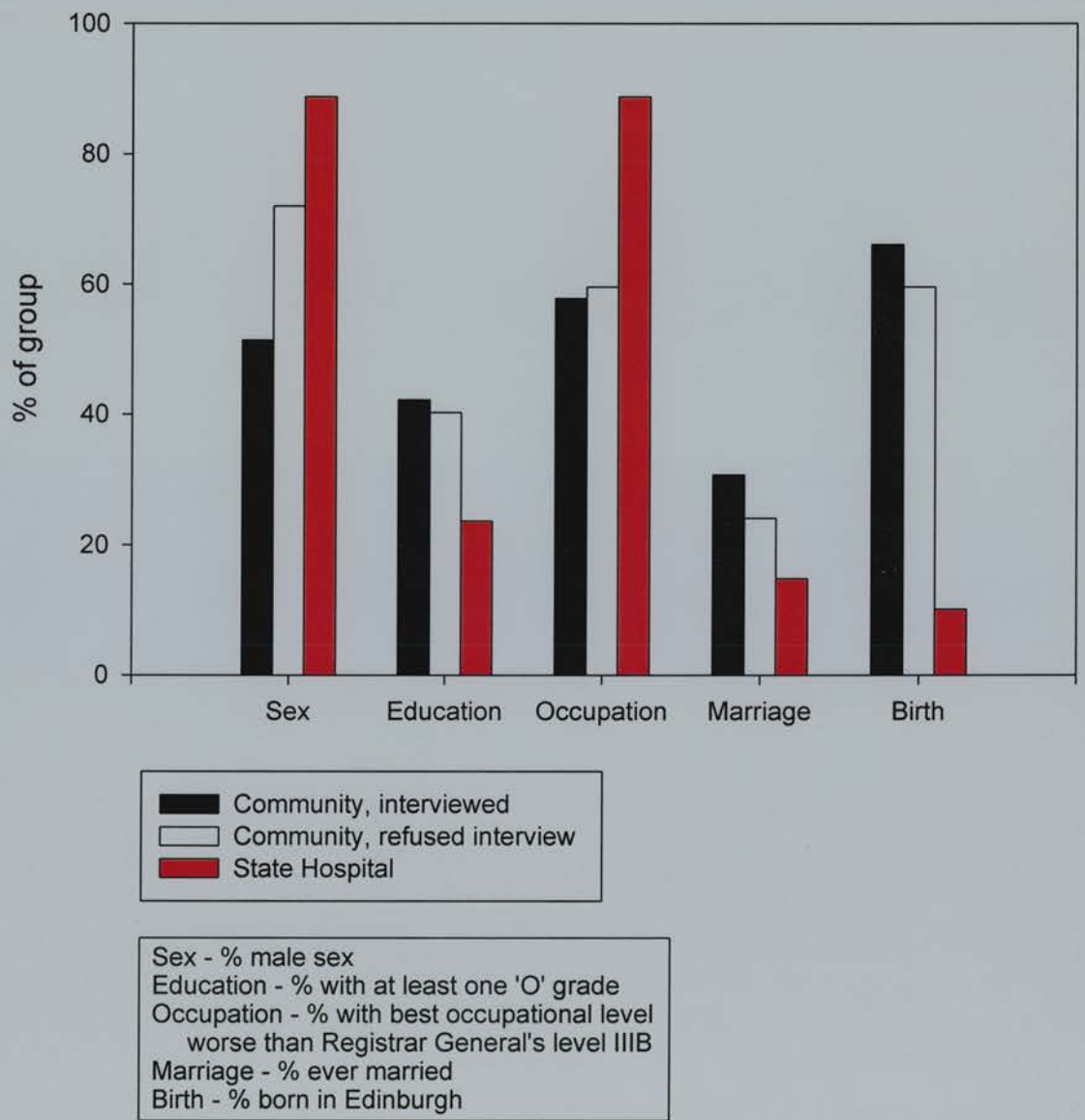
Firstly, the two samples were compared on each of the predictor variables in turn using the Chi-square test for categorical variables. Secondly, two attempts were made to model the process involved in becoming a State Hospital patient using logistic regression. The first attempt used all the available data while the second was restricted to data which would probably be available at the time of the patient's

first ever admission to a psychiatric hospital. The second used the demographic variables gender, academic attainment, marital status, and best occupational level together with variables which would be available after first psychiatric contact and up to the time of the index admission (15 variables).

The 193 participating Community patients with schizophrenia who were successfully interviewed were compared on the five demographic variables shown in figure 1 with the 169 State Hospital patients and with the 109 Community patients who refused to be interviewed.

Differences between the Community groups and the State Hospital group were all highly significant. It was also clear that, on gender only, the non-participating Community group contained more females than the Community participators. Thus this latter group might be unrepresentative in this respect. However, if, in fact this is so, it would be likely to enhance the differences found below.

Figure 1 - Demographic comparisons of Community and State Hospital Patients



Sex - % male sex
Education - % with at least one 'O' grade
Occupation - % with best occupational level worse than Registrar General's level IIIB
Marriage - % ever married
Birth - % born in Edinburgh

Results

Single Variable Comparisons

Table 1 - Comparisons of patients with Schizophrenia in the Community and in the State Hospital (proportion, %)

Variable	Community Patients[1]	State Hospital Patients[1]	χ^2	χ^2 allowing for demographic variables
Presence in a close relative[2] of				
Alcohol or drug abuse	26/193 (13.5)	61/169 (36.1)	24.1***	14.6***
Affective illness	58/193 (30.1)	33/169 (19.5)	6.5*	1.9 NS
Mental handicap or organic illness	10/193 (5.2)	22/169 (13.0)	5.2*	4.2*
Abnormal infant development	11/188 (5.9)	26/169 (15.4)	7.2**	3.0 NS
EpilepsyAny other chronic condition	5/193 (	23/169(13.7)	16.2***2	10.4**15.8*
	2.6) 28/193 (14.5)	62/169 (36.7)	2.3***	**
Alcohol abuse prior to index admission	76/185 (41.1)	92/146 (63.0)	17.4***	6.5*
Illicit drug use prior to index admission	60/184 (32.6)	90/169 (53.3)	13.0***	9.2**
Police contact prior to index admission	75/188 (38.6)	141/156 (90.3)	102.2***	54.8***
One or more violent offences[3] e.g. assault prior to index admission	42/185 (22.7)	122/169 (72.2)	84.7***	38.1***
Suicide attempt prior to index admission	73/188 (38.8)	106/169 (62.7)	17.2***	14.3***
Lithium prior to index admission	18/180 (10.0)	45/169 (26.6)	17.8***	17.6***
Anticholinergics prior to index admission	166/180 (92.2)	130/169 (76.9)	14.8***	2.2 NS
Benzodiazepines prior to index admission	108/179 (60.3)	61/169 (36.1)	22.0***	16.2***
Krawiecka test results, presence of :-				
incongruous affect flattening of	55/193 (28.5)	22/160 (13.8)	11.5***	8.3**
affect retardation	147/193 (76.2)	73/160 (45.6)	36.8***	21.4***
speech incoherence	151/193 (78.2)	16/160 (10.0)	174.0***	111.0***
mutenessNegative symptoms	73/193 (37.8)	29/160 (18.1)	18.2***	8.4**
schizophrenia[4]	87/193 (45.1)	6/160 (3.8)	87.9***	75.1***
	155/193 (72.0)	74/160 (65.0)	46.5***	27.3***

* P<.05 **P<.01 ***P<.001

[1] Ns vary slightly due to missing information

[2] Parent, grandparent, sibling, uncle aunt or cousin

[3] Not including offences leading to the index admission.

[4] Flattening of affect and muteness.

Table 2 - Comparisons of patients with Schizophrenia in the Community and in the State Hospital (mean, sd,N)

	CommunityPatients	State Hospital Patients	χ^2	χ^2 allowing for demographic variables
Premorbid IQ (NART score)	107.3 (10.4) N=180	97.1 (15.7)127	41.0***	18.9***
Age:-				
on 1st Jan 1990	36.5 (11.2) 193	33.0 (9.3) 168	10.2**	8.0**
at first psychiatric contact	23.4 (7.2) 185	19.8 (6.1) 167	23.5***	13.1***
at first psychiatric admission	25.8 (7.9) 187	21.9 (5.9) 167	29.4***	18.3***
Number of hospital admissions excluding the index admission	8.3 (6.7) 160	5.9 (6.4) 158	7.9**	1.6 NS
Months in psychiatric hospital prior to the index admission	28.8 (46.3)147	113.4 (110.9)166	79.8***	42.2***
Component scores for lifetime PSE items[1]				
'positive schizophrenia'	-0.55 (0.57) 139	0.73 (0.85) 168	163.1***	126.5***
'anxiety/depression'	0.40 (1.03) 139	0.03 (0.87) 168	12.0***	6.1*
'remaining syndromes'	-0.46 (0.67) 139	0.39 (1.14) 168	57.6***	42.4***

[1] see text

Tables 1 and 2 set out the significant differences found between the groups both on each variable singly, and after allowing for the five demographic variables of table 1. All of the following analyses were carried out using logistic regression.

No differences were found on the following:-

- proportions of patients with schizophrenia in a close relative,
- the proportions with birth problems,
- the proportions ever having antidepressants, ECT, oral or depot antipsychotics,
- the proportions with children
- the Krawiecka scores for depression, anxiety, hallucinations and delusions
- current IQ.

Modelling

Table 3 sets out the results of two logistic regression models for predicting residence in the State Hospital or the Community. In the first model most of the information likely to be available up to the time of a patient's first ever admission to psychiatric

hospital was considered. This involved 12 variables in all. Place of birth (Edinburgh as against any other place) was not considered at this stage as it was felt that this variable was very specific to the present comparison. The procedure was by stepwise backward deletion, entering all variables first and then removing those that were non-significant one at a time. This resulted in model 1 as shown in table 3. In the second model the four demographic variables apart from place of birth were retained and most of the other variables not included in model 1 covering the patients' lives up to the time of index admission were considered. In order to reduce the number of variables tested to approximately 10% of the smallest group, the nature of the worst police contact, illicit drug use, alcohol abuse and suicide attempts were not considered. All these variables are highly related to the number of police contacts and to the positive schizophrenia principle component. (Correlations:- PSE positive symptoms component with presence of alcohol or drug abuse in a close relative $r = 0.22$, $P<.001$, alcohol abuse $r = 0.28$, $P<.001$, illicit drug use $r = 0.26$, $P<.001$ and attempted suicide $r = 0.23$, $P<.001$. Number of police contacts with alcohol abuse in a close relative $r=0.14$, $P<.01$, alcohol abuse $r=0.28$, $P<.001$, illicit drug use $r=0.30$ $P<.001$ and with suicide attempts $r=0.13$ $P<.01$). This left 15 variables in all. On entry of all these 15 the model proved to be over-determined. Thus the procedure to establish model 2 had to be forward stepwise inclusion of variables.

Table 3 - Predictions of Residence in the State Hospital.

MODEL 1. USING DATA AVAILABLE UP TO THE TIME OF FIRST PSYCHIATRIC ADMISSION				MODEL 2. USING DATA AVAILABLE UP TO THE TIME OF INDEX ADMISSION			
Variable	β	S.E.	χ^2	Variable	β	S.E.	χ^2
Suffering a chronic physical condition	1.59	0.26	55.9***	Lifetime positive schizophrenia score	4.96	1.03	100.1***
Age at first psychiatric hospital admission	-0.09	0.02	25.6***	Lifetime remaining syndromes score	2.85	0.75	50.8***
Gain of at least one O grade	-1.21	0.28	18.9***	Months in psychiatric hospital prior to the index admission	0.06	0.02	42.4***
Gender	-1.84	0.38	26.1***	Benzodiazepines at some time prior to index admission	-2.32	1.03	6.3*
Alcohol or drug abuse in a close relative	1.23	0.31	14.9***	Number of police contacts prior to index admission	2.08	1.12	4.0*
				Gain of at least one O'grade	-2.59	1.15	6.4*
				Number of hospital admissions prior to index admission	-0.13	0.05	7.1**
Overall Improvement 134.05, df 5, P<.001				Overall Improvement 291.5, df 7, P<.001			
Accuracy of prediction Overall 75.1% correct Community 77.3% State Hospital 72.7% Nagelkerke R^2 0.43				Accuracy of prediction Overall 97.5% correct Community 97.0% State Hospital 97.9% Nagelkerke R^2 0.94			

When place of birth (Edinburgh or elsewhere) is entered into the models after the other variables it is a highly significant predictor (chi square = 69.7 and 29.2 respectively) but all the other variables bar one retain their significance. This exception is the number of hospital admissions in the second model.

Both the derived models were tested on men and women separately. For the men both models held true with all the constituent variables remaining significant. For the women chronic physical condition, gain of an O grade and number of hospital admissions failed to be significant in model 2 and gain of an O grade and alcohol or

drug abuse in a close relative failed to predict significantly in model 1. These latter findings may well be due to the smaller number of women in the samples (N=73).

Discussion

This chapter compares schizophrenic patients in the Community with patients in a secure institution. One of the first difficulties encountered concerned sampling. The Community participators had a lower proportion of women than the Community non-participators. However, the participators still had a higher proportion of women than the State Hospital group. Therefore it is likely that any bias would be in the direction of attenuating the differences found. Further, it has been shown above that the model predicting residence in the State Hospital which was established on both sexes, holds good when the women are omitted. Another difficulty is that the majority of the Community patients (58.5%) were born in Edinburgh, whereas this is true of only 9.6% of the Carstairs patients. Unfortunately data on parental social class and place of residence were too incomplete for closer comparisons. However, when place of birth (Edinburgh/not Edinburgh) is controlled by inclusion in the logistic regressions only one predictor variable fails to remain significant. Thus while being born in Edinburgh is indeed a predictor of residence in the Community it does not account for the other findings. Furthermore, when all five demographic variables shown in figure 1 were held constant, significant differences between the Community participators and the State Hospital patients remained on all the other variables considered bar three.

The quality of the casenotes on which much of the study is based is variable. This is particularly true of the family background data where it was often impossible to ascertain the incidence of the various psychiatric disorders, particularly in the more distant relatives. However, it seems more likely that psychiatric abnormalities would be missed rather than falsely included. Thus some of the differences above might well be less than those obtained. It was also unfortunate that there were insufficient data for a more detailed study of the background history, particularly the history of violence.

A more general problem concerns what Bartlett (1930) described as 'effort after meaning'. For the State Hospital group, both the patient and the clinician may strive harder to discover facts which could explain the patient's disastrous progression into detention. There might therefore be some bias towards significant differences, particularly perhaps for data concerning earlier history. However, some of the variables studied, e.g. gain of at least one O-grade, recorded suicide attempts, number of hospital admissions, the presence of a chronic physical condition and the Krawiecka scale findings would appear to be somewhat less susceptible to these biases and these variables show highly significant differences between the two groups. Thus it seems rather unlikely that effort after meaning could account for the findings.

Finally, there is the question of conditions other than schizophrenia. Each State Hospital patient included in the study had a primary diagnosis of schizophrenia but could also receive up to three other diagnoses. These other diagnoses included personality disorder, depression, mania, alcoholism and mental retardation. Only 60 out of the 169 State Hospital patients received only the single diagnosis of schizophrenia. When the other 109 State Hospital patients were dropped from the comparisons in table 2, thirteen out of the 29 differences tested remain significant, even still allowing for the demographic variables. Differences which remained significant beyond the 0.01 level were alcohol abuse in a close relative, chronic physical condition other than epilepsy, number of police contacts, nature of the worst police contact, benzodiazepines prior to admission, Krawiecka retardation and speech incoherence, duration of psychiatric hospital admissions and the positive schizophrenia principle component. Age at first psychiatric contact, alcohol and illicit drug abuse become totally non-significant and most other variables show non-significant trends similar to those in the main comparisons. Clearly some of the differences reported above may be partly associated with conditions other than schizophrenia suffered by the State Hospital patients.

This research has found many large and highly significant differences (see tables 1, 2 and 3) between the two cohorts. It has been possible to build a model using just eight of the variables which correctly predicts group membership for 95.4% of cases. Another model based only on information drawn from earlier in the patients' lives is successful in 77.1% of cases. These models, of course, have their limitations. The levels of successful prediction, while extraordinarily high, would not be as great in other samples and small random fluctuations could well affect exactly which variables would be predictors in any replication of the study. Further the models are predictive only. Virtually none of the particular variables considered could be said to directly cause entry to the State Hospital. However, these models do seem to illustrate how very large the differences are likely to be between patients with schizophrenia in the Community and those in secure accommodation.

Perhaps the most unexpected finding was the big difference in the family background of alcohol and drug abuse. Schizophrenic patients with such a background tend, later in life, to become drug abusers and/or alcohol abusers themselves, to exhibit more florid schizophrenic symptoms and to resort both to violence and self-harm. In many instances they end up in the State Hospital. Opposite to expectation, Community schizophrenic patients were if anything more likely to have a known schizophrenic or psychotic relative in the family. This result is in line with that of Johnstone et al (1995) who found that, where there was a poor outcome of schizophrenic illness, family history tended to be unavailable. This was certainly the case for many of the maximum security patients of the present study.

On the whole the results are in accord with other work. In particular, the big difference in lifetime schizophrenic symptomatology between State Hospital and Community schizophrenic patients suggests that, as Taylor and Monahan (1996) point out, symptoms present at the time of a violent act play a large part in it, and are more important than diagnostic label. There are strong relationships between lifetime positive schizophrenic symptoms and alcohol abuse and illicit drug use and this is consistent with Smith and Hucker's idea (1994) that drug and alcohol abuse may exacerbate symptoms which in turn lead to violence, although, of course

causation could be the other way round. Marzuk's contention (1996) that the early family environment could be important is indirectly supported by the findings on alcoholic relatives. In accord with Johnstone et al (1991) the study did find a much greater degree of developmental abnormality in the State Hospital patients compared to those in the Community.

One of the main findings is that patients with schizophrenia who are likely to eventually need high security accommodation may be recognisable at the first psychiatric contact at about age 20 or the first hospitalisation for schizophrenia at about age 22. At that stage the findings above that 77.1% of the patients in the present study could be correctly discriminated suggest that recognition of those at risk might well be possible. There is likely to be a history of drug abuse, anti-social behaviour, police contacts and self-harm. The family background may be one of deprivation, with alcohol and/or drug abusing relatives in evidence or, alternatively, no knowledge concerning key close relatives. Early schizophrenic onset may be another clue at this point. Many of the distinctive features found suggest the possibility that it is not a worse schizophrenic disease process that results in progression to the State hospital, but rather a deprived background and a lack of social support coupled with the schizophrenia.

Chapter VI - Learning Disability and Schizophrenia

Many people with mild learning disability live in the community without encountering the criminal justice system, but some do offend and may require care and treatment in a secure psychiatric setting such as the State Hospital, Carstairs.

This chapter aims to identify factors that may particularly distinguish people with learning disability in the State Hospital, from those in the community. The research includes both those with learning disability alone and those with co-morbid learning disability and schizophrenia. It is reported that the point prevalence of schizophrenia in people with mild learning disability is approximately three times that of the general population (Turner, 1989). The reasons for this discrepancy are unclear although recently it has been suggested that in some people such co-morbidity may be a severe and highly familial form of schizophrenia (Doody et al, 1998). This study seeks to provide predictors of admission to the State hospital in people with learning disability with and without schizophrenia. Further understanding of the pathway to the severe disturbance preceding such admission may provide pointers to possible intervention.

Aims

1. To compare community and high security cohorts of patients with learning disability or learning disability and schizophrenia.
2. To identify predictors of admission to special security psychiatric care in people with learning disability with and without schizophrenia.

Method

The Original Data Sets

The study is based on two extensive sets of data. One concerns 39 subjects with a co-morbid diagnosis of schizophrenia and mild learning disability and 28 age and

sex matched people with mild learning disability alone and no history of psychosis (Doody et al, 1998). Co-morbid cases were originally derived from a database held by the Information and Statistics Division (ISD) of the Scottish Health Service (Kendrick and Clark, 1993). Control subjects with mild learning disability were recruited using the Lothian Psychiatric Case Register. The second study (see chapter 1) concerned all 241 patients resident in the State Hospital between 25th August 1992 and 30th September 1993. Eleven of these 241 patients had a co-morbid diagnosis of schizophrenia and mild learning disability and a further 29 had mild learning disability alone and no history of psychosis. In both studies the St. Louis criteria (Feighner et al, 1972) were used to establish a diagnosis of schizophrenia. Learning disability was defined by Doody and co-workers by a documented IQ (pre-morbid IQ in the co-morbid group) between 50 and 70 and a history of attendance at remedial education. Cases of Down's syndrome were excluded because of possible age associated progressive cognitive impairment (Heston, 1982).

Comparable data

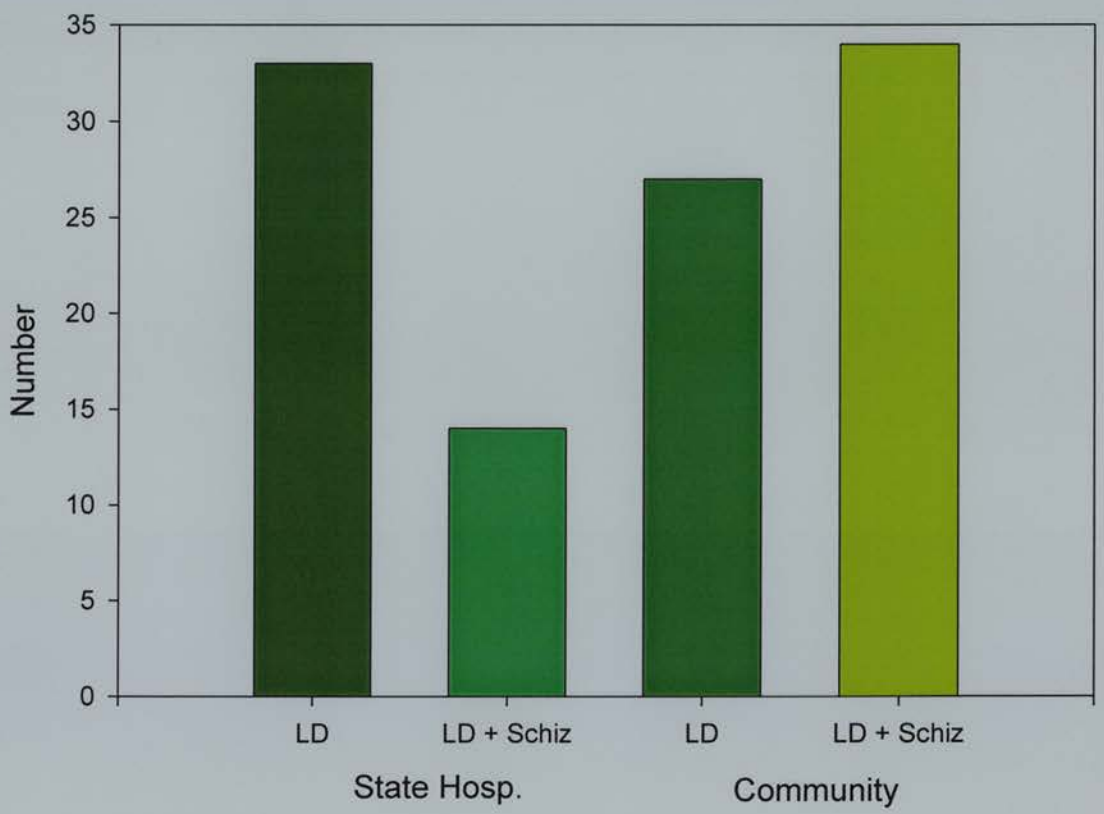
Data from case records in both studies were used to provide socio-demographic variables, family history of schizophrenia or learning disability, alcohol abuse and illicit drug use, the age of first hospital admission, the number and duration of hospital admissions, history of head injury, meningitis or epilepsy, antipsychotic medication history, attempts at self-harm, and previous police contact. In those patients interviewed, data on current IQ, current psychiatric symptoms and current medication were obtained.

Classification for the current study

108 subjects were classified into four groups (see figure 1) as follows:-

1. Fourteen patients with schizophrenia and learning disability (co-morbidity) who were (9 cases, Thomson et al, 1997) or who had been (5 cases, Doody et al, 1998) patients in the State Hospital.

Figure 1 - Classification for current study



LD - Learning disability
LD + Schiz - Learning disability plus Schizophrenia

2. Thirty-four subjects with schizophrenia and mild learning disability (co-morbidity) who had never been patients in the State Hospital (Doody et al, 1998).
3. Thirty-three patients with mild learning disability alone who were, (32 cases, Thomson et al, 1997) or who had been (1 case, Doody et al, 1998), patients in the State Hospital.
4. Twenty-seven subjects with mild learning disability and no history of psychosis who had never been patients in the State Hospital (Doody et al, 1998).

These four groups were compared on the available data using chi-square and ANOVA tests as appropriate. A discriminant analysis was performed to further elucidate salient differences between groups. Group defining variables were excluded as predictors. Given the potential for violation of assumptions, the parametric discriminant analysis described here was confirmed by a logistic discrimination using the PcCarp package (Fuller et al, 1986).

Group defining variables

A number of variables in the study were essentially prerequisite for membership in the four groups or in the study population. Results on these variables are shown in the first seven rows of table 1. There were no differences on current IQ (Quick Test: Ammons and Ammons, 1962) or numbers attending special school. A high proportion of the State Hospital groups attended list D schools (residential education for children with behavioural problems or offending behaviour), compared to none of the community subjects. The State Hospital groups were significantly more likely to have a history of police contact for violence than groups in the community. Subjects in the community learning disability group were less likely than others to have received antipsychotic medication, and both learning disability groups had experienced fewer delusions and hallucinations at the time of interview.

Results

Table 1 - Group Comparisons

	State Hospital co-morbid	Community co-morbid	State Hospital LD	Community LD	Significance
Group defining variables					
IQ	Mean 1.3 SD 16.3 N 11	Mean 62.6 SD 11.7 N 31	Mean 65.9 SD 15.0 N 29	Mean 64.3 SD 13.7 N 27	F=0.42 NS
Special school	9/14 64%	26/34 76%	27/33 82%	23/26 88%	χ^2 =3.55, NS
List D school	2/14 14%	0/34 0%	6/33 18%	0/27 0%	χ^2 =11.24*
Police contact for violence	10/14 71%	5/34 15%	19/33 58%	3/27 11%	χ^2 =28.8***
Neuroleptic medication ever	14/14 100%	34/34 100%	27/33 82%	3/27 11%	χ^2 =70.2***
Current delusions	8/14 57%	10/34 29%	2/30 7%	0/24 0%	χ^2 =23.6***
Current hallucinations	5/14 36%	13/34 38%	0/30 0%	0/24 0%	χ^2 =24.6***
Demographic and family history variables					
Female	4/14 29%	16/34 47%	2/33 6%	12/27 44%	χ^2 =15.9**
Single	13/14 93%	26/34 77%	31/33 94%	17/27 63%	χ^2 =10.8*
Ever employed	8/14 57%	20/34 59%	14/33 42%	8/27 30%	χ^2 =6.0 NS
Family History					
LD only	4/14 29%	4/30 13%	10/33 0%	11/22 50%	χ^2 =8.3*
Schizophrenia only	2/14 14%	9/30 30%	0/33 0%	1/22 5%	χ^2 =14.8**
Both	1/14 7%	8/30 27%	1/33 3%	1/22 5%	χ^2 =10.7*
Medical and social history variables					
Age at first hospital admission	Mean 16.1 SD 7.3 N 14	Mean 26.7 SD 10.9 N 34	Mean 16.5 SD 7.4 N 33	Mean 8.9 SD 13.2 N 27	F=15.6***
Number of hospital admissions	Mean 4.2 SD 2.7 N 13	Mean 6.9 SD 5.0 N 34	Mean 2.7 SD 2.2 N 33	Mean 3.5 SD 10.6 N 27	F=2.9*
More than 2 years in hospital	12/13 92%	12/33 36%	19/33 57%	9/26 35%	χ^2 =15.0**
Meningitis, epilepsy or head injury	8/14 57%	15/34 44%	16/33 49%	5/27 19%	χ^2 =8.1*
One or more suicide attempts	3/14 21%	5/34 14%	15/33 46%	1/27 4%	χ^2 =16.8***
Abuse of alcohol and/or illicit drugs	4/14 29%	6/34 18%	11/33 33%	0/27 0%	χ^2 =11.4**

* P<.05 ** P<.01 *** P<.001

Demographic and Family History

These results are shown in table 1. Subjects in the State Hospital were more likely to be male and single. There were no significant differences in employment status between groups. Considering family histories, subjects with learning disability alone were more likely to have a first or second degree relative with learning disability, and co-morbid subjects were more likely to have close relatives with either schizophrenia or learning disability.

Medical and Social History

Table one shows that significant between group differences are apparent in all six variables in this category. Of all four groups the community learning disability group had the earliest mean age of first admission and the community co-morbid group the latest. The community groups had spent a shorter overall time in hospital. Meningitis, epilepsy and head injury were most prevalent in the State Hospital co-morbid group and least prevalent in the community learning disability group. Previous alcohol and drug misuse occurred more often in patients from the State Hospital than those in the community.

Gender Differences

No clear gender differences emerged when separate analyses were performed for the 74 men and 34 women. Trends appeared to be in the same direction in both sexes for all variables although, in many cases, small numbers precluded the finding of significant differences. Of the 17 significant differences found for both genders together, 9 remain significant when the men were considered separately.

Discriminant Analysis

Five of the twelve predictor variables considered were significant in both analyses. The parametric analysis achieved a correct prediction rate of 67 out of 108 (62.0%) and the logistic discrimination was correct on 72 out of 108 (66.7%). Two functions were significant beyond the 0.001 level in the parametric analysis. The first function was loaded by a higher age of first admission, higher likelihood of a family history

of both schizophrenia and learning disability, and female gender. This function largely distinguished the community co-morbid group from the others. The second function distinguished the State Hospital learning disability group at one extreme from the community learning disability group at the other. It is loaded by one or more suicide attempts, never being married and male gender. The rotated standardised discriminant function coefficients were as follows:-

	I	II
Age at first hospital admission	.83	.48
Family history of schizophrenia and LD	.47	-.05
Female gender	.38	-.36
One or more suicide attempts	-.25	.60
Never married	.14	.58

The discriminant functions evaluated at the group means were:-

Special Hospital co-morbid	-.16	.12
Community co-morbid	1.11	.08
Special Hospital LD	-.54	.72
Community LD	-.65	-1.05

Discussion

There are known associations between offending behaviour and both intellectual impairment and schizophrenia. Hodgins (1992) in an unselected Swedish birth cohort demonstrated that people with intellectual impairment were more likely to engage in criminal behaviour than the general population. A prospective follow up study of the 1966 Finnish birth cohort (Tiihonen et al, 1997) considered associations between specific mental illnesses and criminality. It concluded that an individual with schizophrenia was seven times more likely to commit a criminal offence than a member of the general population. Other studies have disagreed with this finding (Steadman, 1998). This chapter has sought to further explore relationships between

schizophrenia, learning disability and criminality in Scotland by seeking predictors of admission to the State Hospital.

The links between social deprivation and crime are well established. Disadvantage, in its many forms is an inherent characteristic of the State hospital population. The majority of patients have experienced adverse childhood events such as, poverty, emotional instability, physical abuse, sexual abuse or parental separation (chapter 1). A disturbed upbringing may result in difficulty in acquiring basic life skills, such as numeracy and literacy. All learning disability subjects in this study attracted the diagnosis from formal IQ testing and not simply an evaluation of educational attainment.

There are three main methodological limitations of this research. Firstly, the community assessors were not blind to either diagnosis or experimental group status. Secondly, community subjects with learning disabilities were pre-selected not to have a history of antipsychotic drug usage or psychiatric illness. Finally as a consequence of family fragmentation, it was not always possible to determine with a high degree of certainty the presence or absence of a family history of learning disability or schizophrenia.

Admissions to the State Hospital of people with learning disability and no psychosis

The main predictors of admission to the State Hospital in people with learning disabilities and no psychosis in Scotland were drug and alcohol abuse, previous suicide attempts and never being married.

Alcohol and drug misuse

In the past people with learning disabilities have tended to live in closely supervised and segregated settings. More recently, 'normalisation' and integrated community care have resulted in a greater emphasis being placed on the autonomy and independence of the individual. It is perhaps as a consequence of philosophical and attitudinal change that issues of drug and alcohol abuse have only recently been

considered pertinent to people with learning disabilities (Christian and Poling, 1997). Studies of this area (DiNitto and Krishef, 1983; Edgerton, 1986; Gress and Boss, 1996) have reported that although many people with learning disabilities do use alcohol and cannabis on a regular basis, they do so to a lesser extent than their contemporaries in the general population. In addition, relatively few people with learning disabilities consume other illicit drugs e.g. LSD, cocaine and amphetamines.

In the present study one third of the State Hospital learning disability group had abused either alcohol or drugs. In contrast, at interview none of the community learning disability group admitted to the abuse of either alcohol or illicit drugs. Hence this study shows that people in the State Hospital with learning disabilities are more likely to have a history of drug and alcohol abuse than community subjects. Although these results highlight the increasing problem of 'dual diagnosis' i.e. lifetime substance misuse in people with psychiatric illness (Regier et al, 1990), the relationship between alcohol and drug misuse and admission to the State Hospital appear to be particularly salient in people with learning disabilities. The practical difficulties of working with people with learning disabilities who abuse alcohol and the need for further research to be directed into this area have been recently highlighted (Clarke and Wilson, 1999).

Deliberate self-harm

Nearly half of those people with learning disabilities alone admitted to the State hospital had attempted suicide on at least one occasion. Suicidal behaviour is believed to be an under reported phenomenon in people with learning disabilities and co-morbid psychiatric disorders (Walters et al, 1995). A meta-analysis of available literature (Harris and Barraclough, 1997) concluded that virtually all mental disorders, except learning disability and dementia, have an increased risk of completed suicide. However, previous episodes of deliberate self-harm in the State Hospital patients with learning disability, are far from negligible. In contrast, only one individual in the community learning disability group had ever attempted deliberate self-harm.

Age at first hospitalisation

A main distinguishing feature between patients with learning disability in the community and State Hospital was an almost eight year difference in age at first hospital admission. The community group had an earlier mean age of admission. Given that there is no significant difference in mean IQ between these two groups a number of possibilities exist to account for this finding:

1. The State Hospital patients manifested aberrant and disturbed behaviour even in childhood, making them unattractive and problematic to admit.
2. The community group is more likely to have parents with a learning disability and may therefore have been more likely to become involved with social work or healthcare professionals.
3. The earlier contact with hospital services found in the community LD sample was beneficial in averting or modifying the future development of disturbed or criminal behaviour in adolescence.
4. There is a higher proportion of female patients in the community group. Disturbed behaviour in females at an early age may be less acceptable than in male contemporaries. Hence, females with learning disabilities may have been more likely to be admitted for assessment at an early age than males.

Admissions to the State Hospital of people with schizophrenia and pre-morbid learning disability

Co-morbid patients who reside, or have resided, in the State hospital are likely to have an early age of first hospital admission, no family history of schizophrenia or learning disability, a history of cerebral infection or head injury and to be male. Conversely, co-morbid subjects outwith the State hospital are relatively more likely to have a later age of first hospitalisation, a positive family history of the co-occurrence of schizophrenia and mild learning disability, and to be female.

Age of first hospitalisation

This research has shown that co-morbid subjects in the State Hospital have a significantly earlier age of first hospitalisation than co-morbid subjects in the

community. This finding is of interest. In a recent Edinburgh based study (Doody et al, 1998), that did not access the State Hospital population, there were no significant differences in ages of first symptoms of schizophrenia, consultation, admission or diagnosis between subjects with both schizophrenia and mild learning disability and matched controls with schizophrenia alone. This was somewhat surprising, as other parameters used to determine the severity of psychosis e.g. psychopathology, duration of admissions, suggested that the co-morbid subjects were more severely affected than controls with schizophrenia alone. It has generally been considered that more severe forms of schizophrenia have an earlier age of onset.

This research now indicates that the mean age of first hospitalisation is much earlier for State Hospital co-morbid subjects (16.1 years s.d. 7.3) than expected in people with schizophrenia in the general population (25.4 years for males and 28.9 years for females – Jablensky and Cole, 1997) and ten years earlier than people with co-morbidity in the community cohort (26.7 years s.d. 10.9) (Doody et al, 1998).

It has been suggested that some people with co-morbidity may have a malignant form of schizophrenia, which is initially manifested in childhood by cognitive impairment prior to the onset of psychotic symptomatology (Doody et al, 1998). The very early age of first hospitalisation of co-morbid patients in the State Hospital supports this hypothesis and suggests that in Scotland those with the worst form of schizophrenia may be resident in the State Hospital.

The gender differences seen in this study are compatible with the work of Castle and Murray (1991), which concluded that females generally develop schizophrenia later than males who are less likely to have a family history of the disease. Such gender differences may be more pronounced amongst the co-morbid population where early cognitive impairment heralds the onset of a more severe form of illness.

Implications for the generality of schizophrenia

Admissions to the State Hospital of people with co-morbid learning disability and schizophrenia were associated with male gender, early age of onset, neurobiological

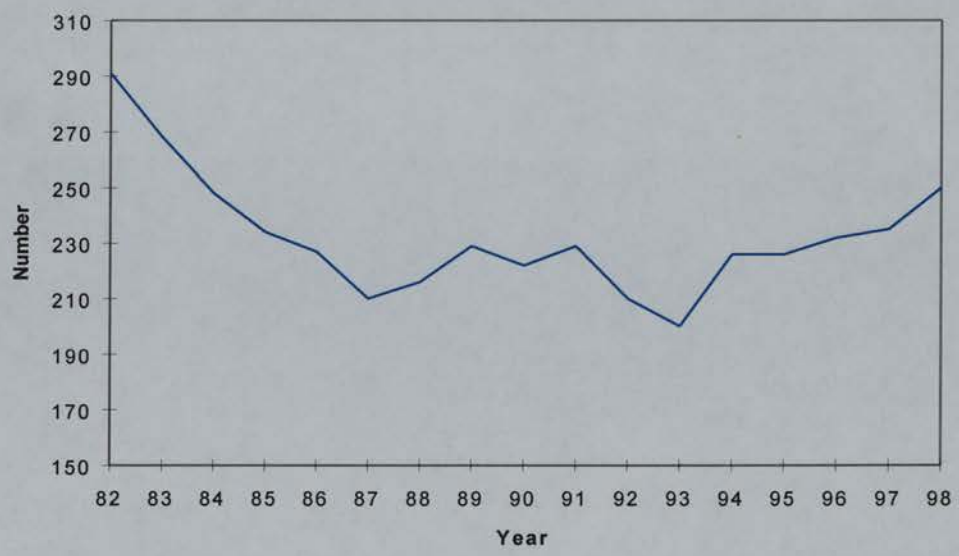
insult, active delusions, police contact for violence and an absent family history of learning disability or schizophrenia. This was consistent with the possibility that a particularly malignant form of schizophrenia may occur in these patients. In contrast, co-morbid subjects living in Scotland outwith the State Hospital were more likely to be female, have a later age of onset and a positive family history of schizophrenia. In these female co-morbid patients a familial form of illness, characterised by pre-morbid cognitive impairment, but not associated with State Hospital admission or violence, seemed to occur.

Three main strategic areas aimed at reducing the number of admissions of people with learning disabilities to the State Hospital emerge. Firstly, targeting the early detection and subsequent treatment of alcohol and substance misuse amongst people with learning disabilities may be of benefit. Secondly, new approaches to the management of attempted suicide in people with learning disability may be required. Thirdly, a greater awareness amongst health professionals in Scotland that learning disabled males with schizophrenia, an early age of first admission, and no family history of either schizophrenia or learning disability are over represented in the State Hospital. Finally, it is possible that such co-morbid patients in the State Hospital may be suffering from a particularly malignant form of schizophrenia, rarely seen in community samples of middle aged subjects, that manifests in childhood as cognitive impairment prior to the onset of psychosis in the teenage years.

Chapter VII - A Review of Special Security Psychiatric Services for Scotland and Northern Ireland

The patient population in the State Hospital fell sharply during the 1980s. This fall levelled out somewhat in 1987 but continued until December 1993 when the total patient population stood at 200. Since then it has been rising, sharply in some years, less so in others (Figure 1)

Figure 1 - The size of The State Hospital population 1982 - 1998



Further there was concern that the nature of the population might be changing, with increases in the numbers admitted who were charged or convicted of serious offences and in the numbers testing positive for drugs. The broad purposes of this chapter were threefold - to monitor these possible trends in detail, to try to provide

explanations for them and to predict the future size requirement of the State Hospital.

Aims

1. To plot and analyse trends in admissions to the State Hospital since 1992.

2. To plot and analyse trends in patient transfer/discharge from the State Hospital since 1992

3. To test the null hypotheses that increased admissions to the State Hospital are not associated with:-
   - an increase in admissions to psychiatric hospitals in Scotland
   - a decrease in total number of psychiatric beds in Scotland
   - an increase in criminal convictions in Scotland, particularly those for possession of illicit drugs
   - an increase in prison receptions
   - an increase in psychiatric disposals under sections 70.71 and 72 of the Mental Health (Scotland) Act 1984 or under the Criminal Procedure (Scotland) Acts 1975 and 1995

4. To use the above data to predict the future size requirement of the State Hospital if the present trends continue unchanged

5. To consider the influence of national policies as possible factors contributing to admission to the State Hospital, e.g. mandatory drug testing in Scottish prisons.

Method

The data collected included basic demographic information, admission and tranfer details where appropriate. This information was obtained from a variety of sources. Where possible data were collected for the period from 1/1/91 until 30/6/98,

however for the reasons described below this was not possible for some types of data.

Information on policies or external factors likely to contribute to admissions or discharges/transfers from the State Hospital was gathered from the State Hospital, The Scottish Office, The Scottish Prison Service, The Mental Welfare Commission and relevant local institutions.

1. The Information and Statistics Division (ISD) of the Common Services Agency. In order to complete Aims 1 - 4 data were needed both on the numbers of, and characteristics of, admissions to psychiatric and learning disability hospitals across Scotland as well as data on the nature of admissions to and discharges from The State Hospital. In the original research proposal it was specified that a large proportion of the data required to complete these aims would be obtained from ISD. Summary data were requested from ISD giving the number of admissions and discharges by age, sex and diagnosis for each 6-month interval over the study period. Unfortunately it was not possible to obtain the required data after April 1996. In April 1996 ISD changed the format in which data from local hospitals was to be provided. It is understood that this change was a 'rolling' process such that different institutions changed the manner in which they returned data at different times. As a consequence, as of October 1998 when the last request for data was made, ISD was unable to supply summary data on admissions and discharges to Scottish psychiatric hospitals beyond April 1996. This restricted our comparison between trends in The State Hospital and trends in local hospitals to the period between 1/1/91 and 31/12/95.

As well as summary data, it was intended to obtain data from ISD on individual cases admitted to or discharged from The State Hospital. This data would be used to compare the nature of the admissions to The State Hospital with those to psychiatric hospitals across Scotland, as well as to examine more closely the characteristics of those individuals being admitted to The State Hospital. Thus for each person admitted or discharged over the study period, it was intended to obtain from ISD

basic demographic data, as well as data on the characteristics of the admission (e.g. diagnosis, reasons for, source and type of, admission) or discharge (destination, length of admission).

Unfortunately for two reasons this type of data also could not be derived from ISD. Firstly examination of the data revealed that there were discrepancies between the number of cases admitted and discharged recorded by ISD and the analogous figures which were derived from the daily statement book maintained by the Medical Records Officer at The State Hospital. The daily statement book contains a record of each admission to and discharge from the hospital and records the number of patients resident in the hospital on any given day. Examination of the individual case files indicated that the record kept by the Medical Records Officer was a largely true account of admissions and discharges but that the data supplied by ISD were incomplete. Thus from the data supplied in July 1998 there were 38 cases missing from 1996 and 1997, and 16 cases missing from 1992. There was a smaller discrepancy for the other years of the study period.

The second reason why data from ISD were not sufficient to complete Aims 1 - 4 lay in the lack of detail with which each case was coded over part or all of the study period. For example in order to examine what, if any, changes had taken place in the characteristics of admissions and discharges from The State Hospital it was necessary to determine the reason for the admission and the source of the admission. However this information was coded only in general terms (e.g. whether the admission was from a health or criminal justice source). This lack of resolution meant that these data had to be obtained from a different source.

2. Individual Casenotes

On account of the difficulties noted above it was decided to retrieve the majority of the data required from the individual patient medical casenotes, some 660 cases in all. Although this had the advantage of using a primary source for data collection rather than a secondary source, as a consequence the collection of data was a considerably more time-consuming process than had originally been intended.

For each person admitted or discharged over the study period a casenote analysis form was completed in which was recorded demographic details, information on admission and, where appropriate, discharge, previous psychiatric history and information on drug and alcohol usage.

3. Data supplied by The Security Division of The State Hospital

Drug urinalysis tests have been carried out routinely since mid-1994, Data on the results of these tests were requested from the Security Division of the State Hospital and such data were supplied for the period from 1/9/95 until 31/12/98.

4. Minutes of the Medical Sub-Committee

Decisions regarding the discharge/transfer of patients within The State Hospital are made by the medical sub-committee in light of a recommendation by the responsible medical officer (RMO) of an individual patient. These decisions are recorded in the Medical Sub-Committee minutes. These minutes also record for many patients details of the process of discharge; including dates on which requests are made to local hospitals to assess a patient, the date on which such an assessment is made, the outcome of that assessment, the date on which the medical sub-committee approves a patient's discharge/transfer. Where such data were not available from these minutes they were derived from the casenotes. These dates and the time intervals between each stage of discharge/transfer derived from them provide a source of data concerning the point at which difficulties arise in the discharge process. This process is most clear for those patients who are to be transferred to a local psychiatric hospital. For those transferred to prison the process is less clearly documented since there is usually no assessment by the receiving institution and no ability to decline to accept a patient who has been deemed fit to return. For those patients who are discharged to court and who do not subsequently return to The State Hospital, there is no documented process of discharge. These individuals remain in The State Hospital for assessment and generally the production of a report for court. They are then formally discharged on the date of their appearance in court.

In the case of patients on restriction orders the Secretary of State must also approve the discharge or transfer of any patient from the hospital.

5. Prison Statistics Scotland

Data on the size of the prison population and on the number of individuals entering the prison system for any given year were obtained from data published in 'Prison Statistics Scotland' produced by the Home Department of the Scottish Office. These data were available for years up to and including 1996. Unfortunately although data was requested for 6-monthly intervals, The Scottish Office indicated that it would not be possible to supply this data due to pressure of work.

6. Criminal Proceedings Scotland

Data on the number of crimes reported to the police were obtained from the document 'Criminal Proceedings Scotland' published by the Home Department of the Scottish Office. These data were available for years up to and including 1997.

7. The Mental Welfare Commission

Data on the numbers of persons formally detained in psychiatric hospitals in Scotland were obtained from the annual reports of the Mental Welfare Commission. This information was available for years up to and including 1997/1998.

Results

I The Nature of the State Hospital Population 1991 - 1998

Number of admissions and departures

Over the core study period (1/1/92 - 31/12/97), 414 men were admitted to The State Hospital and 60 women. Of these data were collected on 406 of the men and 57 of the women. Little data was available on 11 patients (2.6% of the admissions) primarily because their medical notes were on loan to other hospitals.

During the core study period 364 men and 78 women departed from The State Hospital. Of these data were collected on 358 men and 76 women. Thus there were 8 cases for which no data were available (1.6% of the discharges). As with the admissions the missing cases were largely a result of medical files being unavailable.

Demographic data

Both the mean and median age of the males admitted to the hospital was 30 years (range 18 - 60 years). The female admissions had a mean and median age of 31 years (range 17 - 69). The mean age of the men on departure was 33.6 years (median = 31 years; range 18 - 67). The mean age of the women on departure was 34.1 years (median = 33 years, range 17 - 69)

Of the men admitted to the State Hospital during the core study interval 66.2 % were single, 5.2% were married, 14.8% were co-habitant, 13.4% were divorced or separated and 0.3% were widowers

Of the women admitted to the State Hospital over the same period 64.6% were single, 4.2% were married, 10.4% were co-habiting, 18.8% were divorced or separated and 2.1% were widows.

Of the men departing over the study period 66.8% were single, 10.3% were married, 11% were cohabiting, 11.3% were divorced or separated and 0.6% were widowers.

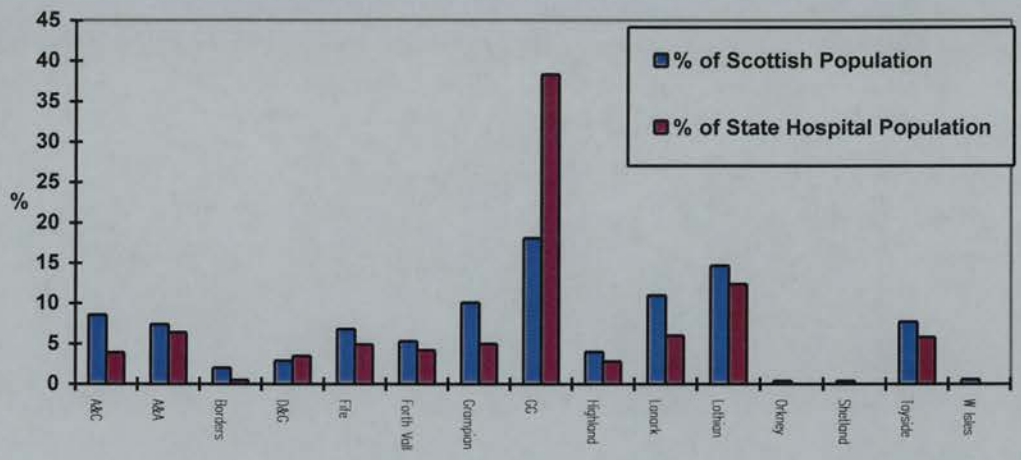
Of the women departing over the study period, 69.4% were single, 3.2% were married, 9.7% were cohabiting, 16.1% were divorced or separated and 1.6% were widows.

The overwhelming majority of those admitted to, or departing from, The State Hospital was white. Of the male admissions only 2% were non-white (0.3% were of Black African ethnicity, 1.0% Black Caribbean, 0.3% Chinese, 0.3% Pakistani). None of the female admissions were of a non-white ethnic origin.

Health Board of Origin

Figure 2 shows the proportion of patients admitted to the State Hospital from each health board over the study period.

Figure 2. Proportion of State Hospital patients from each Health Board compared to proportion of Scottish Population served by that Health Board



A & C = Argyll & Clyde	GG = Greater Glasgow
A & A = Ayrshire & Arran	W/Isles = Western Isles
D & G = Dumfries & Galloway	

The most notable feature of this figure is the over-representation of patients from the Greater Glasgow area in the State Hospital. Thus whereas the Greater Glasgow Health Board serves some 18.1% of the Scottish population, some 38% of the patients admitted to the State Hospital over the period from 1992 to 1997 were from the Greater Glasgow area. In the original State Hospital Survey (chapter 1) 87 (36.1%) patients were admitted from the Greater Glasgow Health Board (GGHB) area and 154 (63.9%) from the other health board areas. A comparison of State Hospital patients from the GGHB area and all other health board areas throughout Scotland and Northern Ireland was carried out on all variables. It found that statistically more male patients were admitted from GGHB (94.3%/85.1%, p=0.037), and more were detained under criminal justice system legal provisions

(Glasgow/other: patient 12.6%/27.1%, offender 62.1%/58.4%, prisoner 25.3%/14.3%, p=0.010). A similar proportion was admitted from court (44.8%/43.5%) in both cohorts, but more Glaswegians came from prison (29.9%/14.3%) and fewer from other psychiatric hospitals (25.3%/42.2%, p=0.004).

Fewer Glaswegians had received previous inpatient treatment (69.0%/82.5%, p=0.014). They had been admitted less often to any psychiatric hospital (3.7/5.8, p=0.002) and fewer had received ECT (14.9%/27.3%, p=0.037).

More of the Glaswegians suffered from chronic health problems (54.0%/39.6%, p=0.032) but fewer had suffered from any form of epilepsy (11.5%/20.8%, p=0.047). Fewer had a known history of a birth problem (13.8%/19.5%) but for more this was unknown (25.3%/11.0%, p=0.013). Similarly fewer had known abnormal infant development (17.2%/23.4%) but again for more this was unknown (18.4%/7.8%, p=0.038). Similarly, it was not possible to assign a socio-economic group in some cases (42.5%/27.3%, p<0.022).

More of the GGHB cohort had a primary diagnosis of schizophrenia (36.8%/26.0%) and this just failed to reach significance (p=0.054). No other significant differences were found in terms of diagnostic groupings: learning disability (18.4%/10.4%); primarily antisocial personality disorder (2.3%/7.1%); primary and secondary ASPD (34.7%/41.4%).

No differences were found on examination of symptoms either on a life-time basis or at interview. Similarly, no differences were found in prescribing for either cohort except that the GGHB group received a greater average dose of oral antipsychotic medication (842mg/490mg, p=0.005).

The GGHB cohort was described as being more under-active during the past month at key worker interview (30.4%/20.0%, p=0.048). More of the GGHB group were said to be able to manage in an open ward (53.0%/38.6%, p=0.038). More received

visits on a weekly or more frequent basis (32.5%/17.9%, p=0.025). This may reflect the greater geographical accessibility of the State Hospital from Glasgow.

No difference was found in the security assessments of the two cohorts carried out by the responsible medical officers. There was a greater discrepancy in the GGHB cohort regarding those patients said not to require the security of the State Hospital but for whom no action regarding transfer had been taken (31.3%/18.3%, p=0.033).

Detention Status

The following tables show the sections of the Mental Health (Scotland) Act 1984 and the Criminal Procedure (Scotland) Acts 1975 and 1995 under which patients were detained over the period from 1992 to 1997. In three cases patients were detained under the common law measure Petition to the Nobile Officium. Data on detention status were not available on four cases.

Table 1 - Sections of the Mental Health (Scotland) Act 1984 under which patients were detained in the State Hospital between 1/1/1992 and 31/12/1997

Section	Number detained (% of all admissions)
s18	93 (19.6)
s24	4 (0.9)
s26	9 (1.9)
s70	33 (7.5)
s71	12 (2.6)
s71 + s72	135 (28.2)

Table 2 - Sections of the Criminal Procedure (Scotland) Acts 1975 and 1995 under which patients were detained in the State Hospital between 1/1/1992 and 31/12/1997

Section	Number detained (% of all admissions)
s52 (25 +330)	71 (14.9)
s53 (174a + 375a)	32 (7.9)
s57 (174 +375)	13 (2.8)
s58 (175 + 376)	28 (5.5)
s58(5) (175(4) + 376(7))	2 (0.4)
s58+59 (175/178 + 376/379)	22 (4.5)
s200 (s180 + s38)	2 (0.4)

Diagnosis

Table 3 summarises the diagnosis of patients admitted to the State Hospital over the period from 1/1/97 until 31/12/97 as given in the casenote admission history.

Table 3 - Numbers of male and female admissions to the State Hospital over the Study Period attracting the specified primary diagnosis

Diagnosis	N (%)	
	Males	Females
Schizophrenic Psychosis	228 (56.2)	18 (31.6)
Drug/Alcohol Induced Psychosis	17 (4.2)	0 (0)
Other psychoses	89 (21.9)	20 (35.1)
Learning Disability	35 (8.6)	4 (7.0)
Personality Disorder	11 (2.7)	5 (8.8)
Neurotic Disorders	3 (0.7)	5 (8.8)
Non-psychotic depression	14 (3.4)	4 (7.0)
Other	9 (2.2)	1 (0.2)

Source of and Reason for Admission

Table 4 shows the reasons given in the admission history for the current admission together with the source of the admission. The 'total' persons column refers to the number of individuals for whom data were available. More than one reason for admission can be supplied for each person.

Table 4 - Reasons for Admission of males admitted to State Hospital from the specified sources

	Admission Reason Given								
Admission Source	Viol[1]	Abs[2]	Self-Harm	Menace	Psych[3]	Ass[4]	Sex In[5]	Other	Total persons
Court	20	6	14	11	57	13	4	14	112
Prison : YOI (all)	1	0	4	0	2	2	0	0	9
Prison - Adult Remand	6	2	6	3	18	4	2	2	32
Prison - Adult Sentenced	26	2	27	18	73	2	0	20	120
Hospital	77	20	25	48	43	3	16	15	126
Total	130	30	76	80	193	24	22	51	399

Notes : 1. Violence 2. Risk of absconding 3. Symptoms of psychosis 4. Assessment 5. Sexually Inappropriate Behaviour

Table 5 shows the admission reason and the source of admission given in the casenotes for females admitted over the study period.

Table 5 - Reasons for admission of females admitted to State Hospital from the specified sources

	Admission Reason							
Source	Violence	Self-Harm	Menace	Psychotic Symptoms	Assess-ment	Fire-Raising	Affective Disorder	Total Persons
Court	5	4	4	5	1	1	4	15
Prison - Remand	2	4	2	3	0	0	1	6
Prison - Sentenced.	2	6	1	2	0	0	2	9
Hospital	23	11	8	0	0	5	1	27
Total	32	25	15	10	1	6	8	57

For males being admitted to the State Hospital from the criminal justice system, in over half the cases evidence of psychotic illness is one reason given for admission. For males being transferred from other hospitals however the primary reason for admission is their violent and menacing behaviour.

For females being transferred from the criminal justice system the reasons for admission are more broadly distributed. However the reason given most frequently for admission from the criminal justice system is self-harm. As with the men the most frequent reason for admission from other parts of the health service is violence, however a notable proportion of admissions specify self-harm.

The male and female admissions differ in regard to the prevalence of sexually inappropriate behaviour and fire-raising as a reason for admission. Whereas sexually inappropriate behaviour was almost entirely restricted to males, fire-raising was more prevalent amongst the female admissions.

Drug and Alcohol Usage

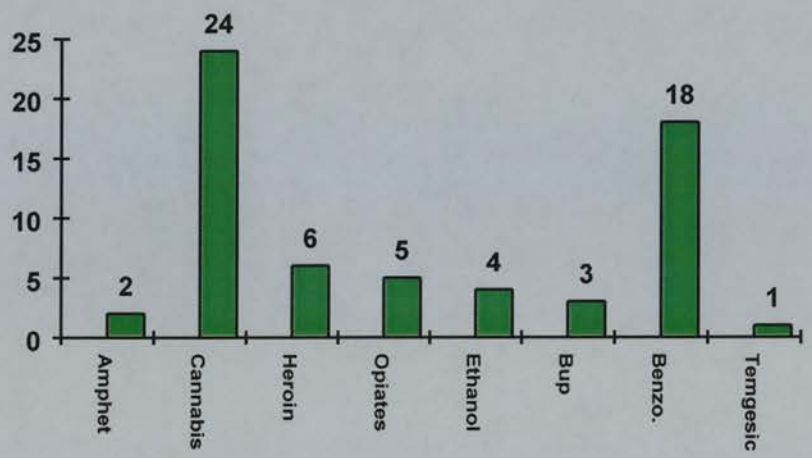
Results of Drug Urinalysis Tests

The data presented in Table 6 and Figure 3 summarises data supplied by the Security Division of The State Hospital. Table 6 summarises, in 6-monthly intervals, the number of drug tests performed, the number of positive tests and the proportion of patients admitted giving rise to positive tests on admission. Figure 3 shows the numbers of positive results for each of the drugs tested.

Table 6 - Summary of the results of routine admission drug tests performed between Jan 1996 and June 1998

6-month period ending	Total tests N	Total positives N	Positive on admission N (%)
June 1996	1381	11	1 (1.3)
December 1996	1115	13	8 (9.1)
June 1997	1167	6	4 (4.1)
December 1997	1496	8	3 (3.3)
June 1998	1289	7	5 (5.2)
Mean	1289.6	9.0	4.2 (4.6)

Figure 3 - The number of positive tests since 1/1/96 for each type of drug tested



Amphet	= Amphetamine
Bup	= Buprenorphine
Benzo	= Benzodiazepines

Lifetime drug and alcohol usage by patients

Table 7 - Lifetime alcohol usage by patients admitted to The State Hospital, 1992 - 1997

	Males	**Females**
% of those admitted recorded as abusing alcohol prior to admission	66.4	51.0
% alcohol + mental disorder[1]	26.8	10.4
% alcohol + forensic history[2]	33.5	20.4
% alcohol + factor in admission[3]	25.5	16.3

Notes:
1. mental disorder defined as evidence in casenotes of a history of delirium tremens, alcoholic amnesia, alcoholic hallucinosis
2. Use of alcohol implicated in previous offending behaviour
3. Use of alcohol *directly* implicated in current admission

Table 8 shows the equivalent data for lifetime alcohol use for those leaving The State Hospital.

Table 8 - Lifetime use of alcohol prior to State Hospital admission by male and females departing from The State Hospital, 1992 - 1997

	Males	Females
% of those departing who abused alcohol prior to admission	53.7	48.6
% alcohol + mental disorder[1]	25.4	14.9
% alcohol + forensic history[2]	33.9	19.0
% alcohol + factor in admission[3]	19.4	13.6

Notes:
1. mental disorder defined as evidence in casenotes of a history of delirium tremens, alcoholic amnesia, alcoholic hallucinosis
2. Use of alcohol implicated in previous offending behaviour
3. Use of alcohol *directly* implicated in current admission

Table 9 shows the proportion of patients admitted to the State Hospital who are recorded as having abused drugs at any time prior to their admission to the State Hospital and for whom drug usage has been implicated in subsequent mental health problems or in their forensic history or for whom drug usage was directly implicated in their current admission to the State Hospital.

Table 9 - Drug usage by male and female admissions to The State Hospital, 1992 - 1997

	Males	**Females**
% of those admitted who were drug users prior to admission	61.4	34.6
% drugs + mental disorder[1]	29.5	12.2
% drugs + forensic history	26.6	20.4
% drugs + factor in admission	16.6	8.2

Notes:
1. Indications of drug-usage contributing to mental disorder, e.g. drug-induced psychosis

Table 10 shows the analogous figures for those patients leaving The State Hospital over the study period.

Table 10 - Lifetime drug usage by male and female departures from The State Hospital, 1992 - 1997

	Males	**Females**
% of those departing who were drug users prior to admission	51.9	28.8
% drugs + mental disorder	22.8	9.6
% drugs + forensic history	20.7	11.0
% drugs + factor in admission	10.9	6.8

Table 11 shows the percentage of patients admitted to and leaving the hospital between 1992 - 1997 for which usage of the drug indicated is recorded in their casenotes.

Table 11 - Types of drug used prior to admission by patients admitted to or departing from the State Hospital between 1992 and 1997

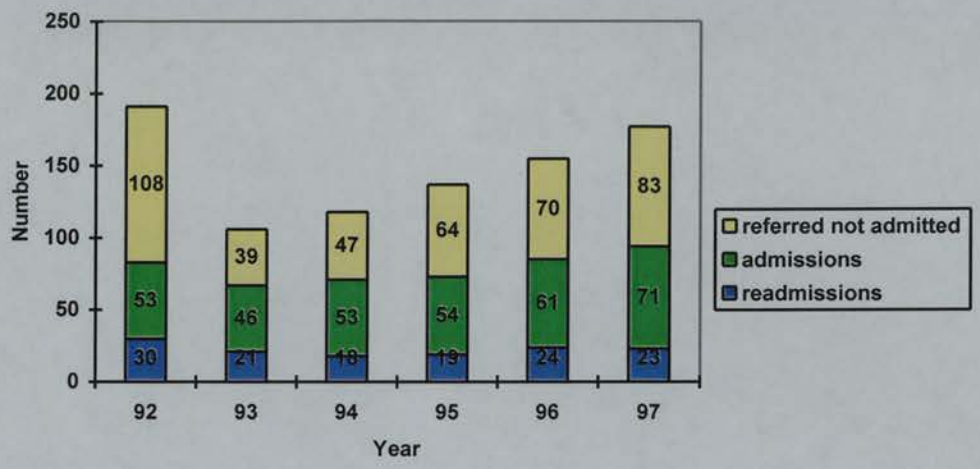
	Male Admissions	**Female Admissions**	**Male Departures**	**Female Departures**
Morphine/ Heroin	16.9	14.3	10.8	11.0
Opiates	20.0	8.2	16.6	6.8
Amphetamine	31.5	12.2	25.0	9.6
Cannabis	52.6	14.3	38.5	16.4
Hallucinogens	31.5	8.2	25.6	9.6
Barbiturates	2.9	0	2.4	0
Benzodiazepines	25.6	8.2	16.9	8.2
Solvents	18.5	12.2	12.2	6.8
Ecstasy	10.1	0	6.8	0

II Changes in the State Hospital 1991-1998

The Total Population

Figure 4 shows the data on referrals, admissions and re-admissions to the State Hospital in the years 1992 to 1997.

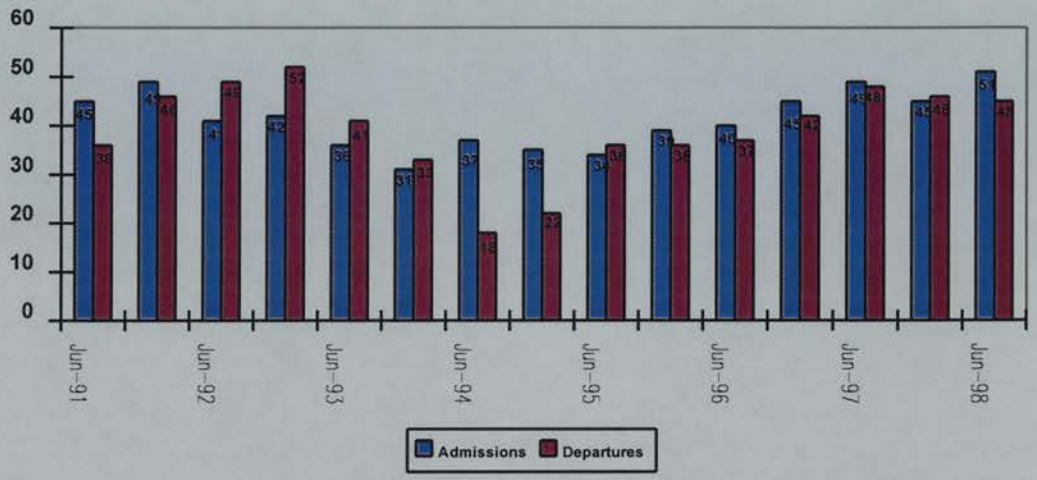
Figure 4 - Numbers of referrals, admissions and re-admissions to the State Hospital in the years 1992 to 1997.



Total referrals were high in 1992, fell sharply in 1993 and have increased year by year ever since. Further, the proportion of referrals not admitted has risen from 39/106 (36.8%) in 1993 to 83/177 (46.9%) in 1997. Proportions of new admissions and re-admissions have both fallen slightly.

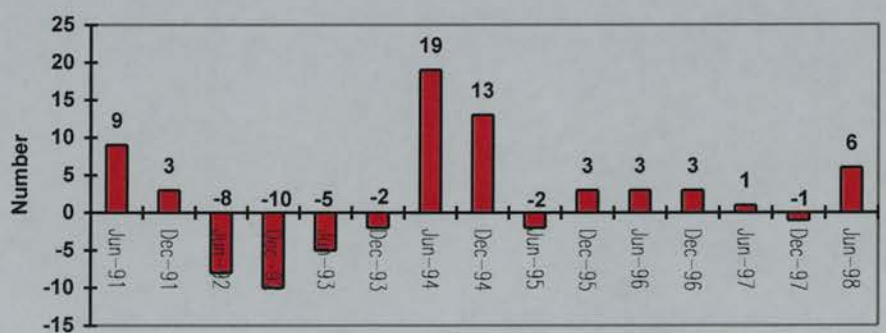
Figure 5 presents the data over a longer period and broken down into 6-monthly intervals. For comparison, the findings on departures are also shown.

Figure 5 - The State Hospital: Admissions and Departures 1991 - 1998



Numbers of transfers and discharges increased with admissions over this period, thus leading to a relatively small and irregular increase in the State Hospital population of 32 patients over the whole period, as shown in Figure 6.

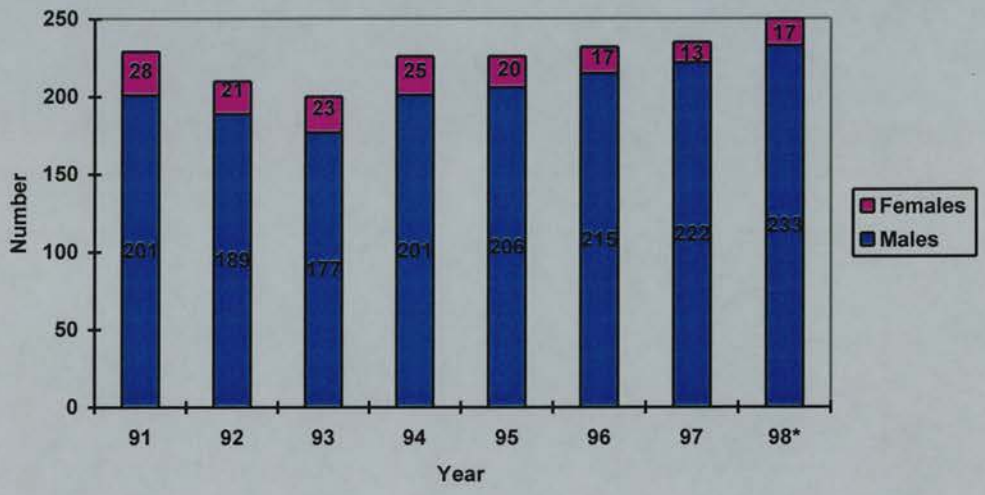
Figure 6 - The State Hospital: Gain in Population 1991 - 1998



The Nature of the Population

Figure 7 shows the numbers of male and female patients resident in the hospital as of 31st December of the specified year.

Figure 7 - The State Hospital: Male and Female Patients 1991 - 1998

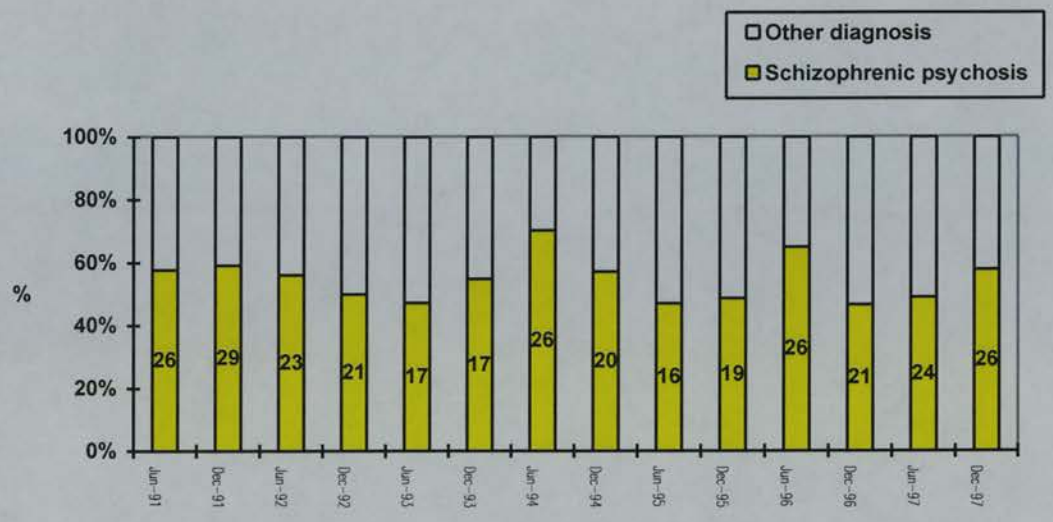


* To August 31st

The proportion of female patients has declined from 28/229 (12.2%) to 17/250 (6.8%) in August 1998.

Figures 8, 9 and 10 are concerned with data on admissions to the State Hospital.

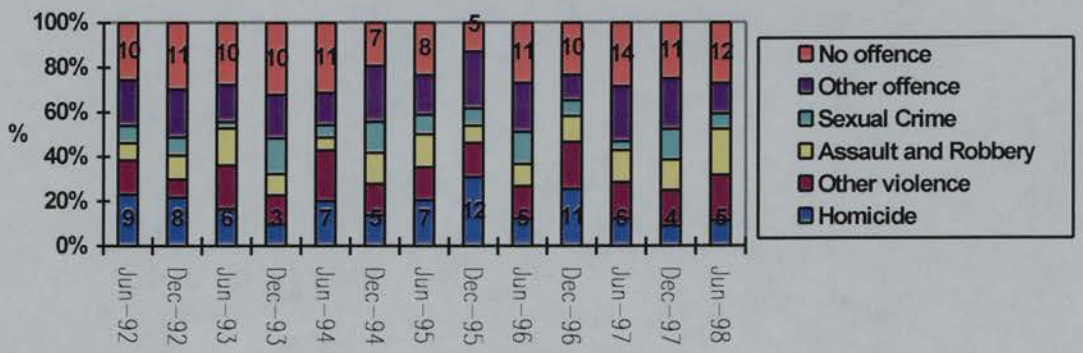
Figure 8 - The State Hospital: Proportions with a diagnosis of schizophrenic psychosis on admission



The proportion varies from 46.7% in the 6-months to December 96 to 76.5% in the 6-months to June 94, but no discernible trend appears over the period to December 97.

Figure 9 shows the nature of the offences that led to admission to the hospital

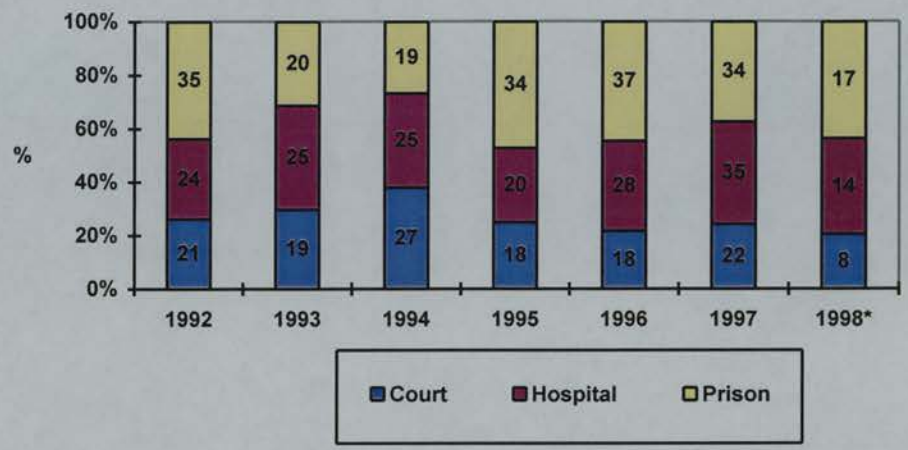
Figure 9 - The State Hospital: Nature of the offences that led to admission 1992 - 1998



Once again there appear to be no definite trends, although the percentage of patients admitted without any index offence is low in the period July- December 1995.

Figure 10 shows the sources of admission of the patients.

Figure 10 - The State Hospital: Sources of Patients 1992 - 1998



*

first 6 months, males only

Once again there are no clear trends.

Figures 11, 12 and 13 display data concerning transfers from the State Hospital

Figure 11 - Proportions of patients departing The State Hospital for various destinations

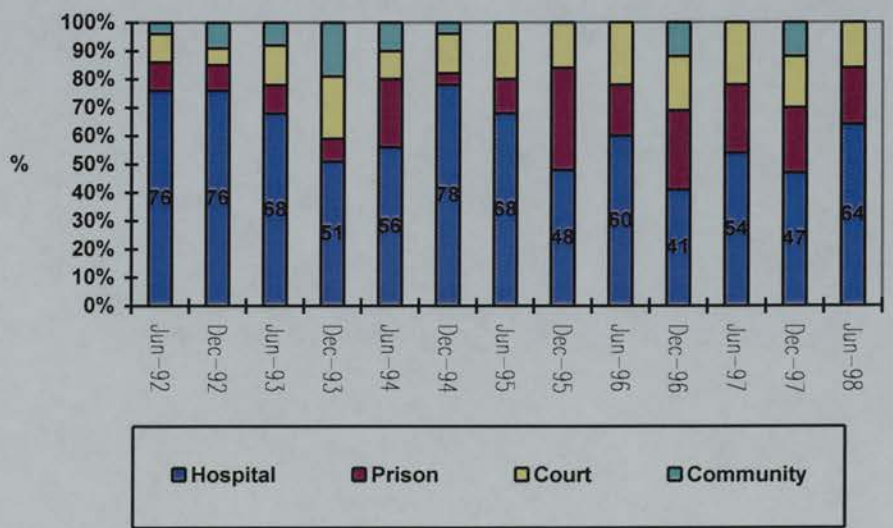


Figure 12 - Median lengths of stay in the state hospital for patients discharged to various destinations

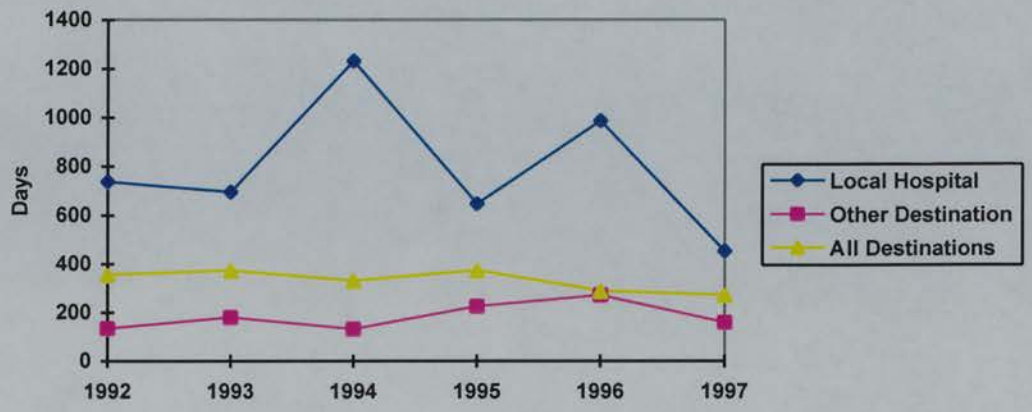
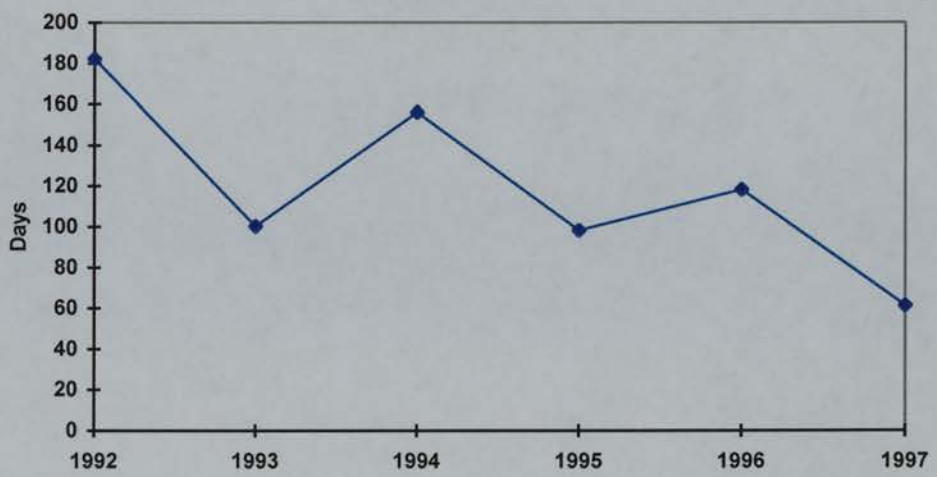


Figure 13 - Median number of days between medical subcommittee approval and transfer to a local hospital



Thus over the course of the study for those patients departing to local hospitals the length of time between approval for discharge and departure has reduced from approximately 6 months to some 2 months.

III Trends in the Community Variables 1991-1997

Five community variables that might be associated with change in the State Hospital population were selected for study (see Aim 3). Changes in these variables during the period 1991 - 1998 are given in figures 14 – 19, beginning with figures 14 and 15 which show the data on recorded crime.

Figure 14 - Total crimes recorded by the police 1991 - 1998

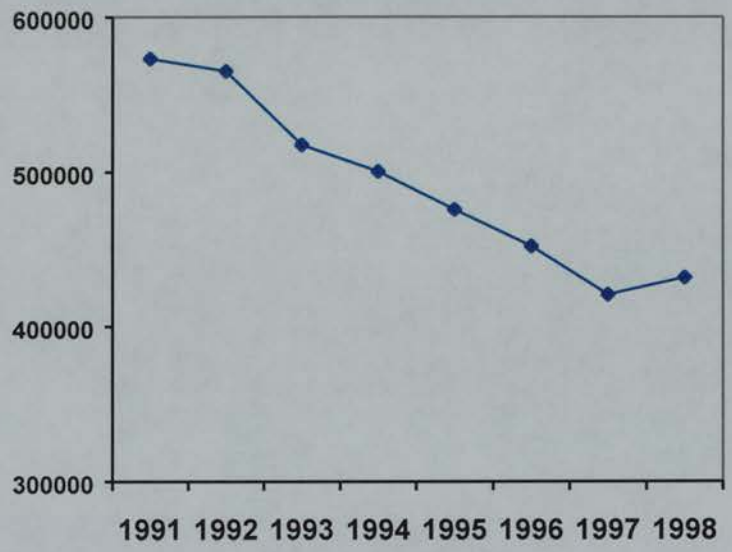
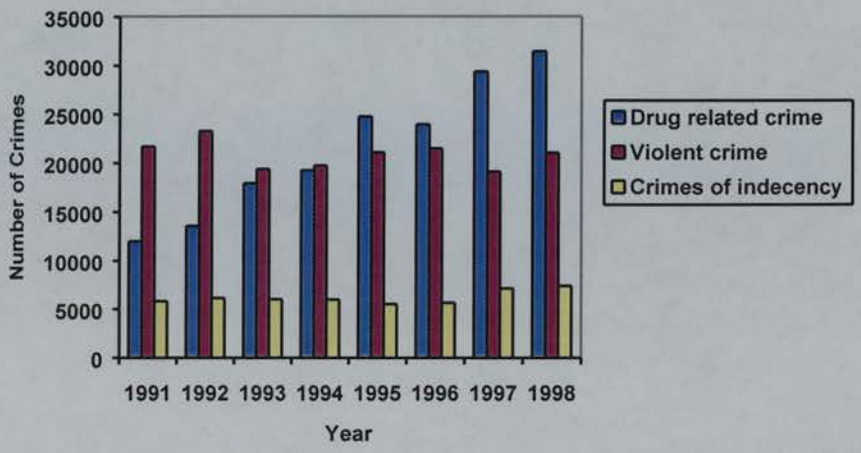


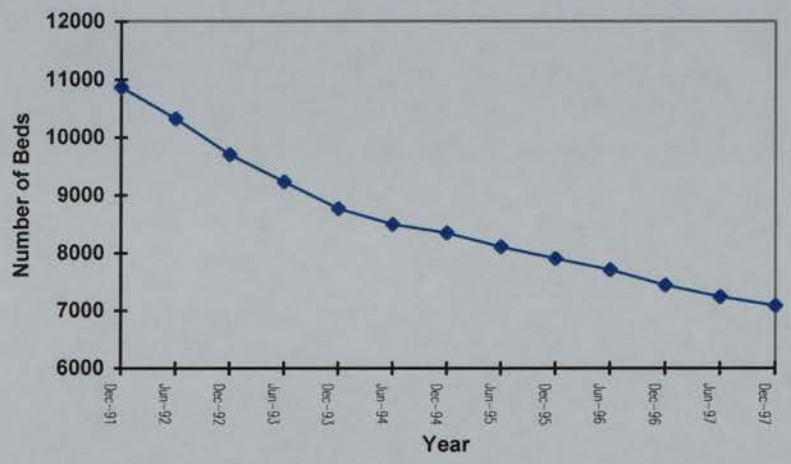
Figure 15 - Drug-related crimes, violent crimes and crimes of indecency recorded by the police 1991 - 1998



Levels of all recorded crimes have fallen sharply during the period. Levels of violent crime and crimes of indecency have remained approximately constant, but levels of drug related crime, of note in this study, have risen steeply.

Figure 16 documents the steady decline in staffed beds throughout Scotland for patients with mental illness and learning disability.

Figure 16 - Average available staffed beds for mental illness and learning disability patients in Scotland



Numbers of prison receptions have increased during the period and there may also have been a slight rise in the numbers of disposals under mental health and criminal procedure legislation and also in the numbers of restriction orders (Figures 17 and 18).

Figure 17 - Number of prison receptions in Scotland 1991 - 1996

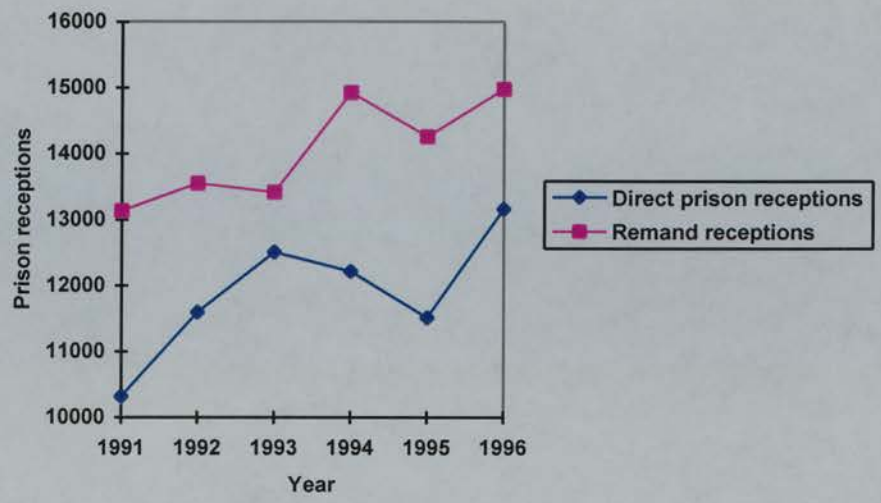


Figure 18 - CP(S)A 1975, 1995 and MH(S)A 1984 disposals 1992 - 1997

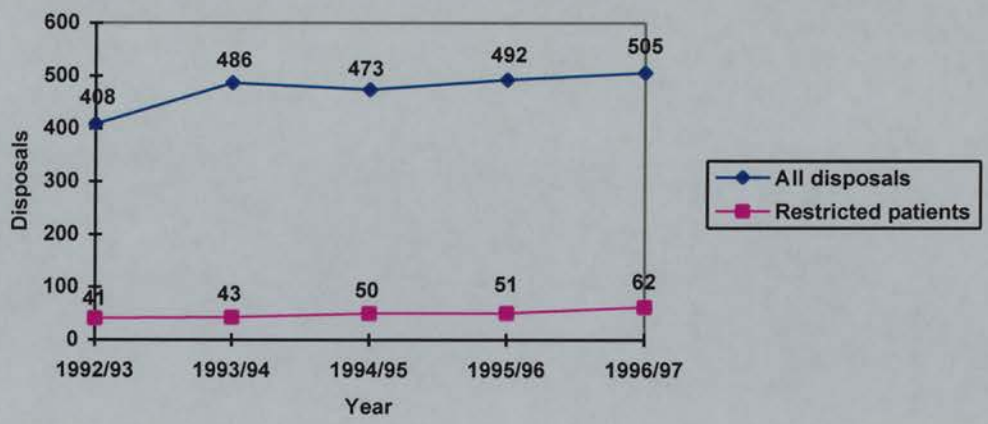
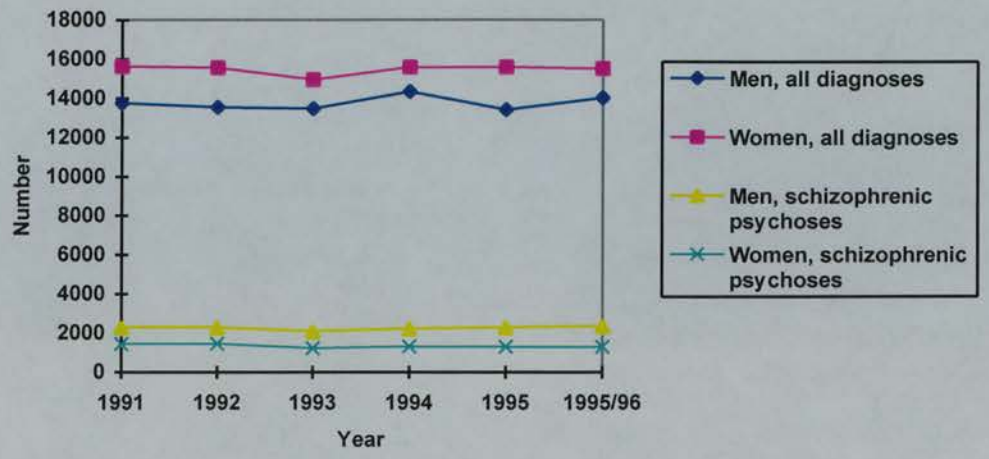


Figure 19 - Hospital admissions for psychiatric illness in Scotland 1991 - 1996



IV Associations between the State Hospital Population and the Community Variables

The Variables concerning the State Hospital Population

The hypotheses outlined in the background section above were tested with respect to four indicators of the State Hospital population. These were :-

- the total population
- the change in the total population year by year
- the male population
- the change in the male population year by year.

The total population was selected as being easiest to visualise and also because it has a less restricted range than the population change .The latter, however, may be a better reflection of immediate changes in the Community and may afford a better basis for inferring causality should there be significant associations with changes in the Community variables. As the State Hospital population is predominantly male, it seemed advisable to perform the analyses separately for males.

Expectations concerning associations with the Community Variables

All the Community variables were included because of definite expectations about the possible associations with the State Hospital variables. These expectations will now be outlined.

Changes in admissions to Scottish psychiatric hospitals. Gains in these admissions might indicate a growing pool of people at risk for admission to the State Hospital. Positive relationships were therefore expected with the State Hospital variables. The decreasing number of psychiatric beds in Scotland could affect the State Hospital population in two ways. Firstly pressures for admission to the State Hospital could be increased because of fewer alternative places. Secondly discharge of patients to other hospitals might be more difficult. Thus negative relationships would be expected.

Increases in criminal convictions in Scotland for possession of illegal drugs would be expected to increase the State Hospital population in that drug use by people suffering from schizophrenia is known to increase their likelihood of violence. Furthermore a possible concentration of disturbed patients into fewer wards might lead to more aggressive behaviour. Positive relationships were expected.

Increases in prison receptions. Increases here might indicate a larger pool of people either convicted or remanded for violent behaviour who might later be diagnosed as psychiatrically disturbed. Positive relationships were again expected.

Disposals and restriction orders under MHSA (1984) ,CPSA(1975+1995). These would be expected to directly affect the State Hospital population.

Causality

Associations between variables do not necessarily indicate causality. If indeed there are any causal relationships between the Community and the State Hospital variables then it would be expected that increases and changes in the Community variables would precede changes in the State Hospital. Therefore all the associations are tested three times, first with the Community variables measured one

year prior to the State Hospital variables, then with both sets coincidental and finally with the Community variables one year subsequent to the State Hospital variables.

The findings

Tables 12 to 17 set out the findings all of which have to be taken as exploratory rather than as definitive because of the small numbers on which the correlations are based. The Ns vary due to the lagging procedure and correlations based on Ns of less than 5 were not considered. The period covered is from 1991 to 1998. Statistically it might be argued that significance tests are inappropriate because the whole population of the State Hospital is involved rather than any sample. However, we have chosen to regard the State Hospital data as samples of the possible populations that might have occurred in each time period. Accordingly one-tailed significance levels are reported.

Table 12 - Correlations of Predictor Variables with total State Hospital Population (Pearson r[1] followed by number of pairs on which it is based)

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	-.65* 8	-.56 7	-.51 7
All drug offences	.85** 8	.68* 8	.63 7
Drug possession	.86** 8	.69* 8	.64 7
All admissions for schizophrenia	-.74 5	.33 5	.44 5
Male admissions for schizophrenia	-.46 5	.60 5	.55 5
All direct prison receptions	.55 7	.21 7	.10 6
Direct prison receptions for violence	.67* 7	.34 7	.34 6
Male direct prison receptions	.54 7	..21 7	.15 6
All remand receptions	.60 7	.49 7	.17 6
Male remand receptions	.51 6	.40 6	.86* 5
MHSA	.50 5	.64 5	.85* 5
CPSA	.93* 5	.41 5	-.22 5
RESTRICTION ORDERS	.70 5	.88* 5	.60 5

* P<0.05 (one-tailed) i.e. the result would be expected to occur by chance only 5 times in 100.
**P<0.01

[1] This may vary from +1 for a perfect positive relationship (high values of one variable going with high values of the other) through 0 for no relationship at all to -1 for a perfect negative relationship (high values going with low values)

Table 13 - Correlations of Predictor Variables with the Male State Hospital Population

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	-.72* 8	-.69* 8	-.65 7
All drug offences	.89** 8	.80** 8	.74* 7
Drug possession	.90** 8	.81** 8	.75* 7
All admissions for schizophrenia	-.66 5	.34 5	.25 5
Male admissions for schizophrenia	-.35 5	.62 5	.38 5
All direct prison receptions	.60 7	.35 7	.32 6
Direct prison receptions for violence	.74* 7	.46 7	.53 6
Male direct prison receptions	.60 7	.35 7	.36 6
All remand receptions	.60 7	.41 7	.30 6
Male remand receptions	.51 6	.33 6	.94** 5
MHSA	.61 5	.71 5	.88* 5
CPSA	.90* 5	.38 5	-.11 5
RESTRICTION ORDERS	.82* 5	.92* 5	.66 5

Table 14 - Correlations of Predictor Variables with Change in Total State Hospital Population

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	-.28 8	-.07 7	-.13 6
All drug offences	.41 8	.06 7	.29 6
Drug possession	.42 8	.06 7	.23 6
All admissions for schizophrenia	-.96** 5	-.03 5	-
Male admissions for schizophrenia	-.91* 5	..09 5	-
All direct prison receptions	.34 7	.00 6	-.65 5
Direct prison receptions for violence	.35 7	-.02 6	-.31 5
Male direct prison receptions	.34 7	-.04 5	-.60 5
All remand receptions	.14 7	.53 6	.06 5
Male remand receptions	..14 6	.22 5	-
MHSA	-.20 5	.-.09 5	.64 5
CPSA	.54 5	.56 5	-.42 5
RESTRICTION ORDERS	-.25 5	.34 5	.38 5

Table 15 - Correlations of Predictor Variables with Change in Male State Hospital Population

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	-.21	-.07	-.52
	8	7	6
All drug offences	.33	.10	.26
	8	7	6
Drug possession	.34	.09	.21
	8	7	6
All admissions for schizophrenia	-.99**	.11	-
	5	5	
Male admissions for schizophrenia	-.91*	.24	-
	5	5	
All direct prison receptions	.34	-.10	-.61
	7	6	5
Direct prison receptions for violence	.38	-.09	-.26
	7	6	5
Male direct prison receptions	.33	-.13	-.55
	7	6	5
All remand receptions	.26	.52	-.02
	7	6	5
Male remand receptions	.25	.24	-
	6	5	
MHSA	-.11	.00	.67
	5	5	5
CPSA	.70	.49	-.47
	5	5	5
RESTRICTION ORDERS	-.09	.41	.36
	5	5	5

Table 16 - Correlations of Change in Predictor Variables with Change in the Total State Hospital Population

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	.52 8	.18 7	.19 6
All drug offences	.57 8	-.28 7	.28 6
Drug possession	.65* 8	-.28 7	.18 6
All admissions for schizophrenia	-	-	-
Male admissions for schizophrenia	-	-	-
All direct prison receptions	.05 7	-.52 6	-.40 5
Direct prison receptions for violence	.21 7	-.57 6	-.22 5
Male direct prison receptions	.04 7	-.55 6	-.33 5
All remand receptions	.32 7	.21 5	-.49 5
Male remand receptions	.42 5	-	-
MHSA	-	-	-
CPSA	-	-	-
RESTRICTION ORDERS	-	-	-

Table 17 - Correlations of Change in Predictor Variables with Gain in Male State Hospital Population

	Predictor 1 year prior	Concurrent	State Hospital 1 year prior
Available mental health beds	.53 8	.16 7	.10 6
All drug offences	.47 8	-.25 7	.26 6
Drug possession	.55 8	-.25 7	.17 6
All admissions for schizophrenia	-	-	-
Male admissions for schizophrenia	-	-	-
All direct prison receptions	.00 7	-.55 6	-.26 5
Direct prison receptions for violence	.17 7	-.61 6	-.08 5
Male direct prison receptions	-.02 7	-.58 6	-.19 5
All remand receptions	.34 7	.13 6	-.54 5
Male remand receptions	.43 5	-	-
MHSA	-	-	-
CPSA	-	-	-
RESTRICTION ORDERS	-	-	-

In most cases the findings are consistent with expectations. The relationships tend to be higher when the predictors precede the State Hospital variables than vice versa. Some of these relationships are highly significant, and this is particularly true for drug offences. Drug possession is the only variable for which it appears that changes are significantly correlated with changes in the State Hospital population one year later. The associations appear to be stronger in tables 1 and 2 where there is less restriction of the range of values that the data may take. There are, nonetheless, some exceptions, notably the associations with external hospital admissions for schizophrenia which come out opposite to prediction. However, most of these exceptions are based on an n of only five.

V Forecasting the Future Size of the State Hospital Population

On account of the small number of time intervals available for the Community variables (eight at maximum in most cases) it was decided not to attempt to base any forecast on these. However the figures showing the changes in the State Hospital population were available for each six months in the period 1991 to 1998 (see figure 20). Hence, using only these figures, it was possible to base a forecast on 16 time intervals each 6 months long. The model chosen to make the forecast was an Auto Regressive Moving Average one (ARIMA, McCleary & Hay 1980). The first step was to try to determine whether the existing data would be best fit by a simple integrative ('straight line') process or by some other function. This is done by computing a series of what are termed auto correlation functions (ACFs). The first of these is the correlation between the series itself and the series with a lag of 6 months. The second is the correlation between the series itself and the series with a lag of one year, and so on. If the process is a simple one then the series of ACFs should start relatively high and diminish fairly steadily towards zero. Other processes lead to different patterns (McCleary & Hay, 1980). When computed the first nine ACFs were:-

0.81 0.52 0.36 0.39 0.35 0.35 0.33 0.36 -0.02

It therefore seemed reasonable to assume a simple integrative process. For such processes the forecast is simply the average of the known readings and the 95% confidence interval is given by

$$-T_{0.05} \times \text{Standard deviation} < \text{forecast} < +T_{0.05} \times \text{Standard deviation}$$

Accordingly the forecast is that the population of the State Hospital will increase on average by 3.19 every six months with a 95% confidence interval of -15.1 to +21.5.

The wide confidence interval means that, for any given 6-month interval there is considerable uncertainty about the forecast. There could be anything from an

average loss of 15 patients to a gain of 21. However, the average change over a longer time period should be a gain of about 3 patients per six months.

Part of the reason for the uncertainty lies in the impact of 'random' events such as the opening and closing of hospital wards within and outside the State Hospital, implementation of new legislation, etc. In figure 20 the timing of four such events is shown in relation to the State Hospital population change figures. The events are:

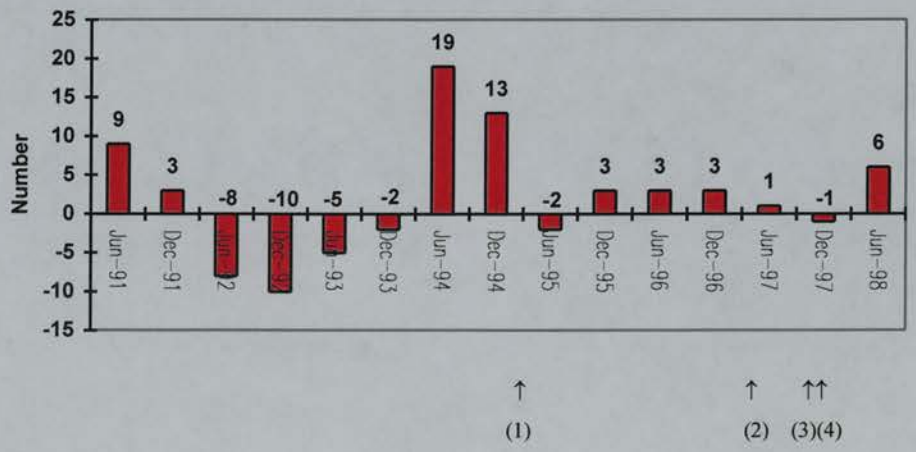
1. The opening of the Blair unit in the Royal Cornhill Hospital Aberdeen. This contained an 11 patient mixed IPCU ward, an 8 patient acute male forensic ward and a 24 male patient continuing care ward .

2. The opening of a 20 bed forensic ward in Woodilee Hospital, Glasgow

3. The opening of Clyde ward in the State Hospital, initially 12 beds, now increased to 20.

4. The start of mandatory drug testing in all prisons.

Figure 20 - The State Hospital: Gain in Population 1991 - 1998



Inspection of figure 20 might suggest that these four events may have had an impact on the change in the State Hospital population in the immediately succeeding time periods.

Discussion

The population of the State Hospital has increased in an irregular manner between 1991 and 1998. Referrals fell in 1993 but have increased steadily ever since, and the proportion of these referrals admitted has declined. Number of actual admissions in each six month period has not shown any very clear upward trend, but the numbers of transfers and departures have failed to keep pace with admissions. The proportion of female patients has declined substantially over the period but there has been otherwise little change in the nature of the patient population. In particular there were no clear movements in proportions of patients with a diagnosis of schizophrenia, in the nature of any offence on admission, or in the sources (prison, court or hospital) from which the patients came. A disproportionate number of patients had Greater Glasgow Health Board as their Health Board of origin. A comparison of patients in the original State Hospital Survey from GGHB and those from elsewhere found that those in the GGHB cohort were more likely to be admitted through the criminal justice route, to have less of a psychiatric history and to have poorer physical ill health. There were no significant differences between the groups however, in terms of diagnosis, lifetime or current symptoms, history of substance misuse, seriousness of index offence, violent behaviour or security requirements. The failure to commence transfer proceedings in the GGHB cohort of those said not to require the security of the State Hospital is indicative of the lack of facilities for forensic psychiatry patients in Glasgow making referral less urgent and meaningful. Given the relatively few significant differences found between patients admitted from GGHB area and those from other health board areas, it is unlikely that the GGHB patient factors alone account for the rise in the State Hospital population. It is not possible to state whether any of the community variables had a greater impact in one geographical area as the data were available nationally and not by health board area.

Turning to the Community variables, there has been little, if any, change in numbers of patients admitted to hospital suffering from psychiatric illness. While all crimes recorded by the police have declined substantially drug offences have risen sharply. Numbers of prison receptions have increased and disposals under CP(S)A and MH(S)A may also have gone up. There has been a dramatic drop in the numbers of available staffed psychiatric beds.

The data show, rather tentatively, that some of these Community variables may indeed have had a causal effect on the population of the State Hospital. This is particularly true of drug-related offences and of the decline in psychiatric beds both of which may have an impact on the State Hospital one year after. However, extreme caution is needed in interpreting the figures as numbers of time intervals are small. The results suggest that further study of these issues would be worthwhile, either by continuing to collect data from the State Hospital over a longer period or by obtaining data from other hospitals.

Assuming that all the trends since 1991 remain constant, the population of the State Hospital is forecast to increase by an average of approximately 3 patients every 6 months for the foreseeable future. This increase, however, is likely to be very irregular, and will be influenced considerably by events such as new legislation, management policies and the opening and closing of hospital wards.

Chapter VIII - Conclusions

Bartlett (1993) noted general themes in maximum security psychiatric hospitals of a high public profile, a lack of consensus on their future and inadequate management of change. Public concern has been expressed regarding standards of care and treatment of patients in maximum security psychiatric care, as demonstrated by the Ashworth Inquiry (Department of Health, 1992). Incidents of dangerous behaviour by psychiatric patients in public places likewise engender consternation, for example the Christopher Clunis case (Coid, 1994). The State Hospital exists within such a background. It provides care in conditions of special security for patients from Scotland and Northern Ireland with mental disorders and dangerous, violent or criminal propensities.

The majority of patients in the State Hospital suffer from schizophrenia and many have multiple diagnoses. Their history of extensive treatment with medication but ongoing symptoms of psychosis and violent behaviour in the previous twelve months, suggests a limited response to treatment, at least, in some patients. In combination with their young average age at first admission of 21 years, their mean duration of psychiatric in-patient care of 9 years and their relatively young current average age of 34 years, a population with major ongoing treatment needs is described.

Adversity is a common theme for these patients from their earliest years with features such as a deprived upbringing, parental substance misuse, and physical ill health including epilepsy. Disturbed behaviour was evident in childhood in a fifth of patients who required special education because of behavioural problems. Many began to misuse drugs and alcohol in adolescence, and at the same time their criminological careers commenced. These features, together with the prominence of men in this population, have much common ground with those found in prisoners. A disturbed childhood can contribute to the development of behavioural problems or a

conduct disorder, which in turn may be a common origin for the development of substance misuse and / or antisocial personality disorder.

Substance misuse is a major issue in this population. Intoxication and withdrawal were precipitants in the events leading to admission in a third of cases. A greater prevalence of alcohol or drug disorders was found in this high security cohort of patients with schizophrenia compared to a community cohort. This research made apparent the need for an alcohol and drug strategy in the State Hospital and this is being developed and implemented. It must be recognised that tackling the issue of substance misuse in an essentially abstinent environment is difficult, and patients will require to be tested out in a lower security environment.

In general these patients represent a very severely ill population whose disadvantages have been compounded by adversities that have arisen from their earliest years. Their history of long-standing psychiatric illness, coupled with disturbed behaviour, insufficient treatment response and social isolation, with over a third receiving no visitors, suggests that they are likely to require substantial care in the future. It is important that such care should be provided to the best possible standard and in the most appropriate setting. Those who do not require the full security arrangements (53.3%) of the State Hospital will continue to require psychiatric care elsewhere. Clearly the identified lack of suitable alternative facilities for the transfer of patients no longer requiring the security of the State Hospital and, in some cases, the failure to provide adequate provision to prevent unnecessary admission to the State Hospital are major issues which must be addressed. With increasing community care and decreasing numbers of psychiatric beds this problem could be further compounded. Inappropriate placement of patients in the State Hospital is contrary to the principles agreed in the Policy for Mentally Disordered Offenders in Scotland (Scottish Office / Department of Health, 1999). This states that health and social services for the mentally ill, including those processed by the criminal justice system, should be provided as near to the patient's home area as is possible.

Such problems require an activity strategy to address them. In Scotland the development of medium secure facilities would be one possible solution and building work commenced on a medium secure unit in Edinburgh this year. Arguments regarding scale and economy in the establishment of such facilities must be considered in view of the size of the Scottish population (approx. 5 million). However, misplaced patients in the State Hospital present a financial, as well as humanitarian burden. The Committee on the Review of Health and Social Services for Mentally Disordered Offenders and Others Requiring Similar Services (DoH/Home Office,1992) indicated a requirement of 30 medium secure beds per million of population. A model for medium secure psychiatric units successfully exists in Denmark which has a similar sized population and crime rate to Scotland and which has only 30 maximum security psychiatric beds. A needs assessment for forensic facilities in Scotland (Thomson et al, 1999) estimated a requirement for between 176 (based on provision in England and Wales) and 306 (based on a "gold standard" from research literature) medium secure beds. In this report the responsible medical officers stated that 50% of admissions could have been avoided if appropriate local facilities were available. This is consistent with the findings in this thesis. It is essential that such facilities are developed in the major population centres in Scotland, particularly Glasgow.

Women in the State Hospital are different from their male counterparts. They were more delusional, aggressive, and consequently more restricted in their movements and activities than men. Their offences, when present, were much less serious and only 3 (12%) women were said to need high security. It is clear that their needs were for intensive psychiatric care rather than high security care.

Using detention status it is possible to divide the State Hospital population into patient, offender and prisoner cohorts. The patients were detained under civil sections of the Mental Health (Scotland) Act 1984. They had more positive and negative symptoms and were more disabled. The offenders were detained under provisions of the Criminal Procedure (Scotland) Act 1975. The prisoner group was defined as those detained under a transfer order or direction with or without

restrictions on discharge. They were characterised by increased depression, anxiety, worry and social unease. The nature of these symptoms can be understood in part by their situation. They had a greater history of alcohol and drug misuse, and of previous, more serious convictions.

Schizophrenia is the commonest diagnosis within the hospital. For many patients, substance misuse or antisocial personality disorder are also issues. Admission is precipitated by a violent act secondary to a psychotic belief; by increasingly, or persistently, aggressive behaviour in conjunction with treatment resistance; or by offending behaviour apparently unrelated to any symptoms of a major psychotic disorder although these may be present.

Following a comparison between high security and community schizophrenic cohorts, it is possible to create a model predicting future residence in the State Hospital. Using data available at the time of first admission and at the time of the index admission, models with an accuracy of prediction of 75.1% and 97.9% respectively were created. There is on average a four year period between first admission with schizophrenia and the index event leading to admission to the State Hospital. There is therefore time for clinical interventions that might prevent the index event leading to admission to high security psychiatric care. The author does not expect clinicians to rigidly use these models in risk assessment, especially as in using this statistical method factors of obvious importance, such as substance misuse, are lost because they correlate with other factors in the model, such as lifetime positive schizophrenic symptoms. Rather these models highlight that male gender, poorer educational attainment, poorer physical health, a family history of substance misuse and age at first admission are indicators of possible future aggression; as are longer hospital stays with fewer admissions, more lifetime positive symptoms of schizophrenia and a more extensive criminological history. Most of these factors suggest that it is a deprived background and lack of social support that leads to admission to the State Hospital, rather than a more severe schizophrenic process. It is clear however, that symptoms are important in many violent acts resulting in admission. The aim of a high security hospital therefore,

must be to address both the psychotic symptoms and other factors contributing to violence such as substance misuse and antisocial traits.

Learning disability was the primary diagnosis in 13.3% of the State Hospital population. A comparison of patients with learning disability with or without schizophrenia in a high security and community setting found that substance misuse and a history of self harm were commoner in the high security learning disability cohort. In men with learning disability and schizophrenia, a younger age at first admission and no family history of learning disability or schizophrenia were over-represented in the State Hospital population. It is possible that such co-morbid patients in the State Hospital may be suffering from a particularly malignant form of schizophrenia, rarely seen in community samples of middle aged subjects, that manifests in childhood as cognitive impairment prior to the onset of psychosis in the teenage years.

In recent years the size of the State Hospital population has been rising sharply, from 200 in 1993 to 242 in 1998. This rise has occurred amid changes in psychiatric provision in the health service and changes in the criminal justice system. A comparison of the trends seen in the mental health and criminal justice systems with trends in the State Hospital population indicates a relationship between the two. Furthermore changes in the number of drug related crimes and in the number of available psychiatric beds may be causally related to increases in the State Hospital population. The proportion admitted from the Glasgow Health Board Area to the State Hospital over the 5-year study period was excessive although the relatively few significant differences found between patients from GGHB and those from other health board areas suggests that it is not patient factors alone that cause this. The number of referrals throughout Scotland increased since 1993 but the proportion not admitted rose from 36.8% in 1993 to 46.9% in 1997. This suggests that there has not been a change in admission criteria or threshold. If current trends in the community continue then it is forecast that the population of The State Hospital will increase by some 6 patients per 6 months (95%CI -15.1 - +21.5) for the foreseeable

future. This estimate is however associated with a considerable degree of uncertainty and will likely be subject to the influence of local and national policies.

There is no single issue that if resolved will solve overnight the problems of those patients detained in the State Hospital. Medical, psychological and sociological advances are required. Further research is being carried into the needs of this population, economic analysis of different forms of secure psychiatric provision, the effect of substance misuse, treatment resistant schizophrenia, and risk assessment using the Violence Risk Appraisal Guide (Webster et al, 1994). The development of working definitions of high, medium and low security psychiatric care is required to monitor the use of new, and existing, facilities as these develop.

There is a need to link research findings to Government Policy and service improvement. This research demonstrates unequivocally that patients in high security psychiatric care in Scotland suffer from major mental disorders and have experienced multiple disadvantages throughout their lifetimes. Their needs are complex. Most require ongoing psychiatric care but for many this need not be in the setting of the State Hospital, and indeed adequate rehabilitation and testing in less secure surroundings cannot take place in this environment. The increase in the State Hospital population has placed emphasis on those inappropriately located patients. The development of a range of forensic psychiatry services throughout Scotland and Northern Ireland would improve the conditions and management of these patients, and, by allowing a gradual re-integration into the community, would contribute to enhanced public safety.

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